DOMESTIC ENGINEERING

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NOTICE TO ADVERTISERS.

Copy and cuts for advertisements intended for a particular issue should reach the office of DOMESTIC ENGINEERING on Wednesday of the previous week if it is desired that a proof of the advertisement shall be submitted. New advertisements can be received up to noon of Wednesday of the week of issue, but no proof can be shown.

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Suggestion:
Cut out; frame neatly; put in show window; change weekly.

HIGH GRADE WORK

demands more than manual dexterity. Good labor can never make a satisfactory installation with poor materials. Therefore the business man who is desirous of doing good work only, will use none but good materials, bearing the maker's name and guarantee for satisfactory service.

Knowledge a Business Asset

Do you appreciate what the trade paper of the day is doing for you in an educational way?

Do you appreciate the vast volume of information it places at your disposal each week, at a cost so low it could almost be regarded as a gift.

We have had striking illustrations from time to time of the high esteem in which our many readers hold "Domestic Engineering" and of our efforts along many lines, but no stronger illustration of its real intrinsic value, from an educational standpoint, could be given than that which came to me from a representative of a large New England supply house, who said: **"Too much cannot be said in behalf of the trade press.** Starting in with a plumbing line and as a salesman meeting a great many plumbers, I desired to familiarize myself with the use and proper installation of the goods I was selling. Seeking all the information I could secure, I took to reading 'Domestic Engineering' studiously. **For two years I followed it carefully** and while I never did a stroke of work as a plumber and didn't intend to work at the trade, the thought struck me that I should like to take the examination as required by law and see where I stood. In my home city in Massachusetts, quite a number were going to make the try, so I concluded to take the examination with them. After the papers were corrected, I found I had passed all right, and was granted a license; not only that, but I **ranked at the head of the list,** which I considered very good, just for a **trade paper student."**

Are you keeping in touch with a trade paper? If so, are you "studiously" reading it? It will give you that which directly applies to your business. It will kee, you even with the times and just a little ahead of your neighbor, who is satisfied he knows the game from beginning to end and is too far along to learn anything.

The greatest possible knowledge of the business in which you are engaged is a business asset, which is likely to keep the bank asset on the right side of the ledger.

Read carefully and "studiously" your trade paper.

Henry H. Gove.

A Young Man's Idea

Kennett Square, Pa.—**As your magazine comes to me every week** I say to myself, I will write to the editor and ask him if, through association with men who read his magazine, he has **ever found one** who can say that he has not been able to apply the moral of his editorials in reference to **conscientious, good, manner of installation, prices,** and the **manner of doing business as a whole.**

I am a young man and an advocate of the belief

that good goods and conscientious work bring more work at better prices.

Now for a question with a big black interrogation mark after it. **Have the majority** of your readers ever used these editorials for a standard in their mode of doing business? If not **they should** and then they would see a reduction in the plumbers and fitters going to the wall. The majority will say, they **have to handle cheap goods** and **have to do cheap work.** There is no such thing as **cheap work;** it is a shoddy, careless way of doing work, and if the master plumber or fitter would see that his men do the work properly and carefully, even if it does take a little longer, he would get his money just as soon and his men would do their work more thoroughly in the future, and then he would **note the increase in his business.**

But "No," they say, the other fellow does not do it, so on it goes from **hurry to carelessness** and finally to the **hated** part of our business,—**shoddy work.**

If I could suggest some way to reach the inner man with your editorial of July 3 I would gladly do it. The only way I could suggest is to send each one a separate embossed copy, with the heading **"Try this on your piano,"** and if every one practised it until they knew it by heart there wouldn't be any **"other fellow"** to do the cheap work because he would have to go out of business.

Cause!!! Lack of orders.

Wm. M. Tuft.

Kitchens and Laundries

Their Planning, Arrangement, Equipment and Sanitation

By Wm. Paul Gerhard, C. E.

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Chapter I.—*The Kitchen.*

It is my intention to discuss in these articles the chief features of the planning, arrangement and equipment of kitchens and laundries. I shall also describe somewhat in detail the modern appliances used for cooking, as well as the fixtures intended to be used for the performance of the washing operations. The kitchen as well as the laundry, whether in the dwelling, or the hotel, or in an institution, must be planned, constructed and equipped so as to be thoroughly *sanitary,* therefore particular attention will be paid to sanitary details.

Definition.—The kitchen of dwelling-houses is a room intended for, and containing, the necessary utensils and appliances for the preparation and the cooking of food. In the case of institutions the term "kitchen" has usually a wider meaning and designates the wing, or sometimes an entirely separate building, erected for the proper performance of the cooking operations for the inmates, the employes, the superintendent and his staff.

In all cases the kitchen should, for sanitary reasons, be used only for the preparation of meals; it should not, except in the case of farm cottages and workingmen's homes, be used as a living room, and in no case should it be used as a bedroom,

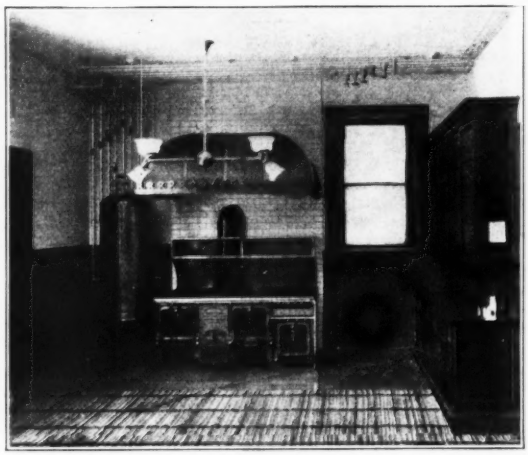

Fig. 1. View of a kitchen, showing the combination coal and gas range with hood and the copper boiler, the sink being on the opposite wall.

an unsanitary practice which I regret to say still prevails in some overcrowded apartment and tenement houses of large cities.

Location.—In city residences the kitchen is generally located in the basement. In the case of suburban and country houses it is more usual to place this room on the ground floor, either at the rear, in an extension, or else in a semi-detached wing. The proposition, which has so often been made by enthusiasts in sanitation, to put the kitchen on the top floor of a house, with a view of preventing the pervasion of the entire house with cooking smells, has not, in practice, been often carried out, except in the case of a few modern clubhouses, and in some other structures where gas cooking ranges only are used or where there is an electric cooking outfit. The chief objections to the plan, namely, the inconvenience of lifting or carrying the coal and the ashes, the necessity of providing speaking tubes and bells for inter-communication between the mistress of the house and the cook, outweigh any advantages which the plan may otherwise possess.

In large households the kitchen should be cut off and entirely separated from the living rooms and

the main part of the house, but it should have easy communication with other parts of the service department, such as the store and pot closets, the scullery, cleaning room, laundry, ironing and drying room, and with the butler's pantry, either by a dumb-waiter, or by a revolving or sliding serving window.

Too much exposure to the sun is not desirable for a kitchen, and for country houses a northern aspect is usually the best.

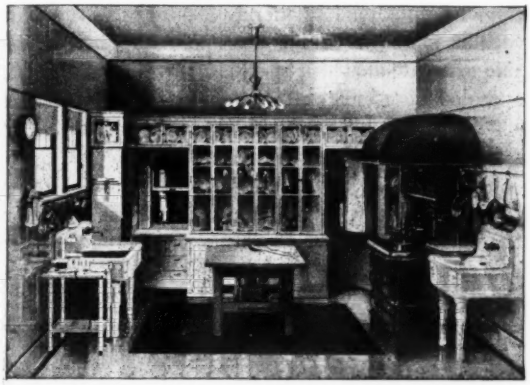

Fig. 2. View of a well-appointed modern kitchen, of which Fig. 3 shows the plan. Figs. 2 and 3 are taken from the booklet on "Modern Plumbing," issued by The J. L. Mott Iron Works, to whom the author is indebted for the use of the illustrations. They show how the kitchen furniture and appliances may be placed to best advantage. A notable feature are the solid porcelain sinks, and this kitchen has three of them—namely, the usual kitchen sink, a deeper vegetable sink and a scullery sink. The serving window between kitchen and butler's pantry is a very useful, easily installed device. The neatness and tidiness of the kitchen are enhanced by the special utensil and towel racks placed over the sinks.

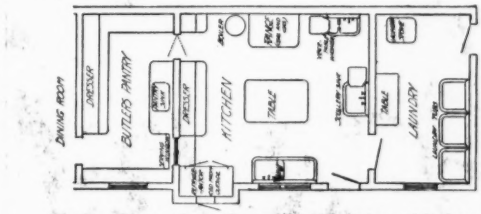

Fig. 3. Plan of well-appointed modern kitchen.

PLAN AND SIZE.—A modern kitchen should be planned and arranged so as to be roomy, convenient and not too small, but it also should not be too large, for this would increase the labor involved in the cooking and dish washing operations, and thus render them a burden to the cook. A kitchen about 15′x20′ in size is ample for even a very large house and the cooking for a small family can be accomplished well in a kitchen not larger than 10′x12′, or having a floor space of 120 square feet. No matter how small the kitchen, it should have the required floor space for the cooking stove or range, the sink, the cook's table, the dresser and for some wall shelves.

Figs. 1-15 show in view and in plan a number of actually built kitchens. The three examples, Figs. 8, 13 and 14, show kitchens of country houses, while the others refer to city houses. In some of these examples, namely in Figs. 10, 11 and 12, the kitchens are very large and roomy, perhaps unnecessarily so, but they belong to very expensive and large houses.

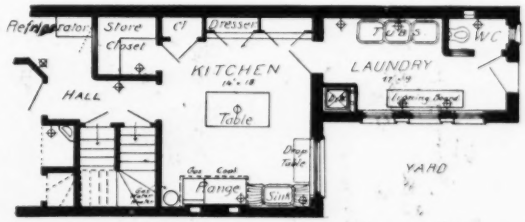

Fig. 4. Plan of the service department of a small city house; kitchen and laundry are separate, and a dumb-waiter is provided to send the dishes to the pantry on the next floor. The kitchen has a combination gas and coal range, and a large gas water heater. There are provided a roomy dresser, a smaller closet and a large store closet.

A kitchen should always be conveniently and comfortably arranged and fitted up, so as to offer facilities for doing the work quickly and well; the matters of ventilation, lighting and plumbing require considerable attention.

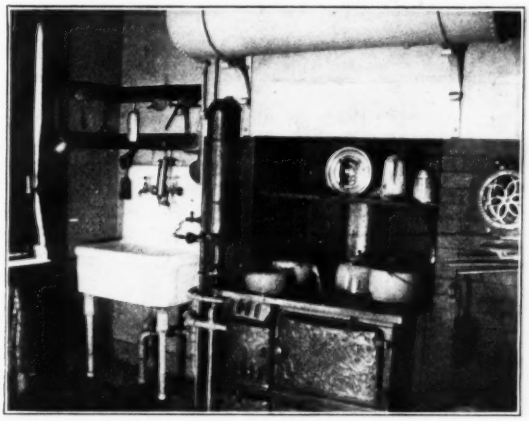

Fig. 5. View in a small city house kitchen. The hot water boiler is suspended horizontally over the range, and may be heated in summer time by the gas heater at left of range. The smoke flue of the range is provided with a "household garbage carbonator."

Essential Sanitary Requirements.—The following are the essential sanitary requirements of a kitchen: It should have plenty of daylight and good artificial lighting; perfect ventilation; durable and easily cleanable furniture, and a perfect cooking apparatus; there should be an absence of superfluous woodwork; all surfaces (walls, floor, ceiling) should be easily cleanable. There must be neither smoke, dust nor objectionable heat. In a "sanitary kitchen" very little dirt accumulates and what does arise can be readily removed.

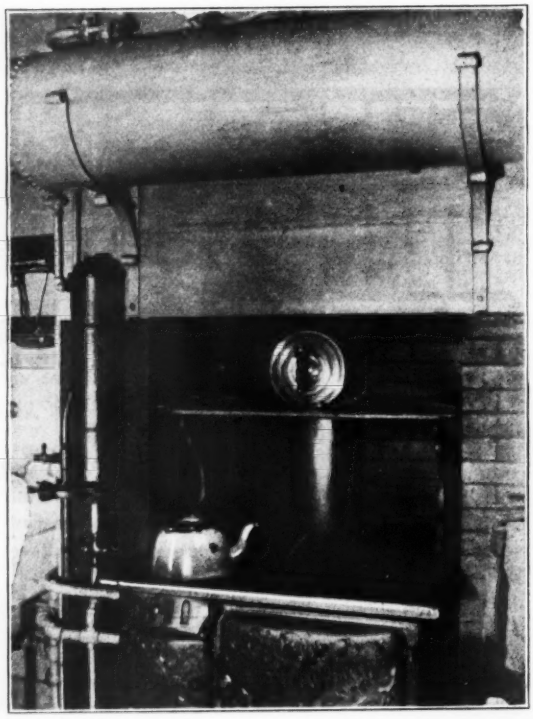

Fig. 6. A larger view of the range is given.

Ventilation.—It is desirable, where the plans of a house permit of such an arrangement, to have windows on opposite sides of the kitchen, in order to obtain cross-ventilation and plenty of air currents; this plan, however, is generally practicable only in the case of detached houses (see Fig. 8). The windows should reach as near to the ceiling as possible, as this helps in lighting the distant corners of the room.

For a kitchen, perfect ventilation is essential, because otherwise the cooking smells are apt to pervade the entire house. Good ventilation is generally secured by placing a hood of generous size directly over the kitchen range (see Figs. 1, 2 and 15), and by arranging a ventilating register, with connection to a vent flue, inside of and near the top of the hood. It is often advisable to provide in addition special exhaust flues or ducts with registers located near the ceiling in order to remove completely all cooking odors and vapors of steam (see Fig. 9). Such vent flues and ducts must always have a positive outward draught, and where this cannot be obtained by merely locating the vent flue parallel to and adjoining the smoke flue, it is advisable to create an artificial exhaust by means of a fan operated by a small electric motor. Fig. 16 shows a "ready-to-run" portable electric ventilating set removing odors from a kitchen.

Good ventilation assists in keeping the kitchen cool. Much can be accomplished in this direction by doing away entirely with the usual kitchen boiler heated from a waterback in the range, which radiates a large amount of heat and makes some kitchens almost unbearable during the summer (see Figs. 4, 10, 12 and 14).

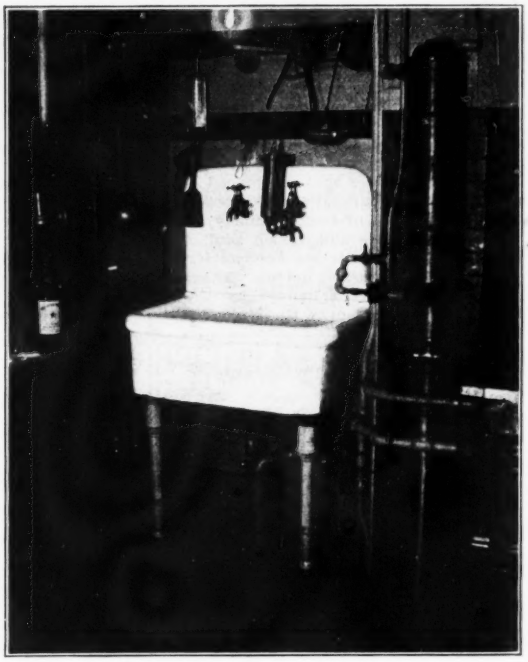

Fig. 7. The solid porcelain kitchen sink, the cold water faucet being provided with a Berkefeld germproof water filter.

As will be explained further on, another efficient remedy consists in the substitution of a gas range in place of the coal range, or at least in the use of

gas or electricity for cooking during the heated season. The location of the kitchen with regard to the points of the compass has also much to do with its temperature. It is obvious that to keep a kitchen cool it should preferably be placed at the north or northeast end of a house, but in city houses this requirement cannot always be followed.

HEATING.—Where cooking is done by means of a coal fire it is obviously unnecessary to provide any other artificial means for heating the kitchen; on the contrary, in these cases the problem often arises, how to keep a kitchen cool. But where, as is frequently the case in modern apartment houses, cooking is done altogether on one of the convenient gas ranges, or by electricity, it is necessary to make provision for heating the kitchen at least during the very cold weather. This is accomplished by means of either steam or hot water radiators, or by an electric heater.

LIGHTING.—A kitchen should be well lighted, both for the sake of convenience and cleanliness. There should not be any dark corners. Plenty of light is secured in daytime by large windows, and by having the walls and ceiling of a light color. The window should light up the sink and the range. At night ample artificial light, both electric and gas, should be provided. In addition to the usual kitchen pendant over the kitchen table, where this is placed in the center of the room, it is necessary to provide gas and electric lights at the sink and at the range. In modern houses it is quite usual to provide one or more electric lights on the inside border of the hood to light up the top of the range (see plans).

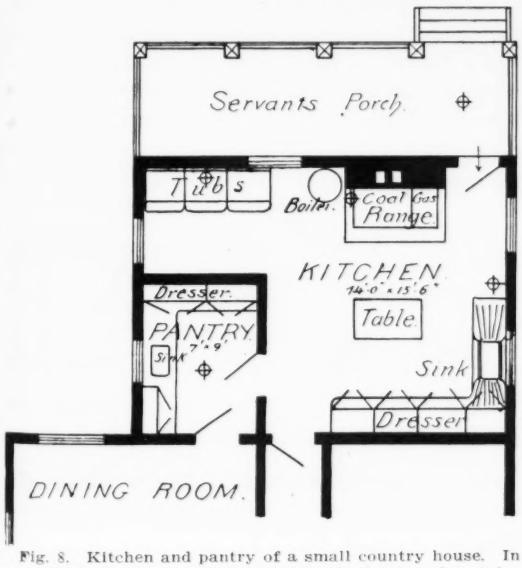

Fig. 8. Kitchen and pantry of a small country house. In an alcove of the kitchen are placed the laundry tubs. There is a large kitchen dresser, a sink, boiler and combination range.

WATER SUPPLY.—A water supply for the kitchen is a prime necessity, of equal importance to the fuel supply for the cooking range. Even the smallest dwelling, without any bathroom conveniences, has a sink and also, in most cases, running cold water. Where there is no water service, a simple form of lift, or lift and force pump, drawing water from either the well or a rainwater cistern, should be fitted up at the sink. But water, available under pressure, is a great convenience; it is better still to have both hot and cold water faucets.

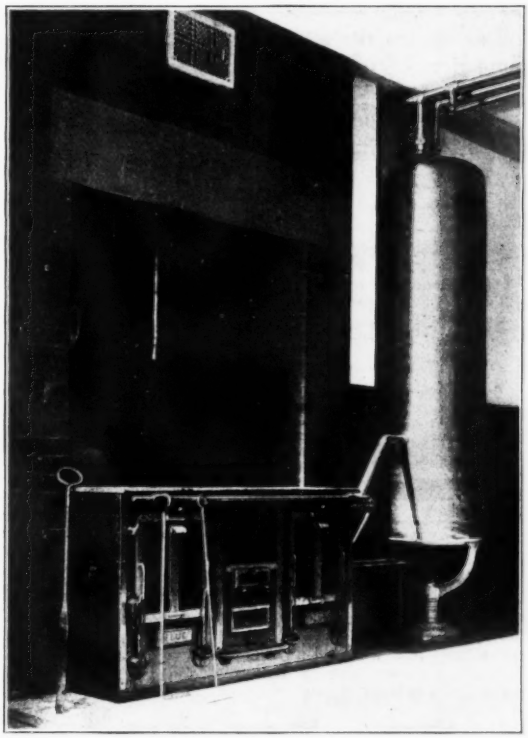

Fig. 9. View of a kitchen range and boiler, the range being a "French" brick-set range with two large ovens. In place of the hood the chimney breast has an enameled ventilating register.

In modern residences the plumbing is not considered complete without a hot-water service, and there are various ways of obtaining it. The usual method is to have a kitchen boiler connected with a waterback in the range. Another way is to have a gas water heater attachment for the boiler. Heating wa-

ter by the electric current is practical, though rather costly. Larger houses, such as those shown in Figs. 10, 11 and 12, are supplied with an abundance of hot water from a central source, generally placed in the cellar. This may be a tank with steam heated coil, or a tank heated by a special hot water heater, or it may be a large automatic gas water heater.

Provision is also sometimes made for drawing filtered drinking water at the kitchen sink.

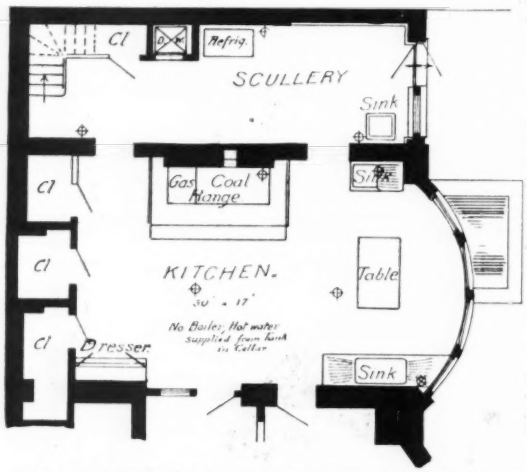

Fig. 10. Plan of kitchen of more than ordinary size, being that of a city house with 11 bathrooms. Adjoining the kitchen is a scullery and the stairs in one corner lead to the butler's pantry on the next floor. There is no kitchen boiler, all hot water being obtained from a large 600-gallon hot-water tank in the cellar, heated by a special hot-water heater.

FLOOR.—The floor of a kitchen should be solid and non-slippery; it should be neither too hard for the feet nor too cold in winter time. A good kitchen floor consists of oiled or varnished hardwood; a good well-painted pine floor answers very well for the less expensive class of houses, or else the floor may be a plain wooden floor, covered with either linoleum or with the cheaper, but less durable, oilcloth.

Sometimes floors of kitchens are tiled with unglazed or encaustic tiles laid in hydraulic cement; the tiles may be small, round, hexagon, or octagon white tiles with or without a colored border, but the larger red and gray tiles alternated look particularly well. A tiled floor, however, is quite expensive and it is objected to by the cook on account of its hard and cold surface, however desirable it may otherwise be from a sanitary point of view. A compromise may often be effected by using tiles only at the sink, at the hot water boiler and at the range, and finishing the rest of the floor in hardwood. There should always be a fireproof floor where the range stands, consisting either of a bluestone or a tile hearth.

The new rubber tile floors are very convenient, durable and efficient, but they are also quite expensive. A carpet should never be used in a kitchen.

In a kitchen all sharp corners between the floor and the walls should be avoided by rounding off the edges to avoid lodging places for dirt. This is sometimes accomplished by using a vitrified tile sanitary base.

CEILING.—The ceiling of a kitchen should not be too low and it is desirable that it should be finished with some material which will strongly withstand the destructive action of kitchen fumes.

WALLS.—The walls of a kitchen should be finished to a height of at least from four to six feet above the floor with a material which is waterproof and can be easily washed. They may be finished with hard plaster or Keene's cement, which should afterwards be either enameled or oil painted. A more expensive finish consists in lining the walls with white or cream colored glazed tiles. A combination of blue and white tiles gives a very pleasing effect; a still more expensive finish consists in facing the walls with polished slabs of marble, of white opaque glass or with enameled brick; an enameled brick finish is particularly desirable for the chimney breasts. In many houses walls finished in hard plaster are divided off in regular squares in imitation of tiles and afterwards enamel painted.

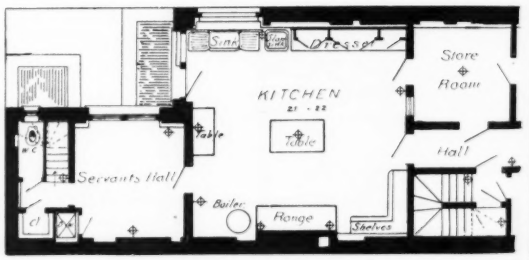

Fig. 11. A large city kitchen, provided with range, boiler, dresser, sink and slopsink.

MOLDINGS.—Moldings form ledges catching dust, and in a kitchen they should be avoided. Door and window trims should be flat and as plain as possible. Do away with cornices and picture rails.

WINDOW AND DOOR SCREENS.—Kitchen windows should always be provided with screens to keep out flies, and outside entrances to a kitchen should have screen doors. Flies are dangerous carriers of disease germs, and it is very important that they

should be kept away from places where the food is stored or prepared.

KITCHEN FURNITURE.—The furniture of the kitchen is partly fixed and partly movable. Among the former fittings the most important are the kitchen range, though in cottages a portable cooking

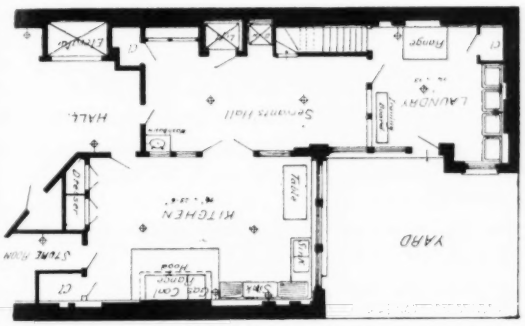

Fig. 12. Large kitchen, with adjoining servants' hall. This also has no kitchen boiler, but there is one kitchen sink, and a vegetable sink with two compartments. The roomy laundry contains a set of four washtubs.

stove is often used; the boiler and the kitchen sink with drain board; also sometimes a special vegetable sink, plenty of hooks and shelves, a center rack with hooks, sometimes a spit for roasting and a garbage carbonator. Among the movable articles of furniture should be mentioned the kitchen table, the chairs, the meat block, the coal scuttle, a utensil

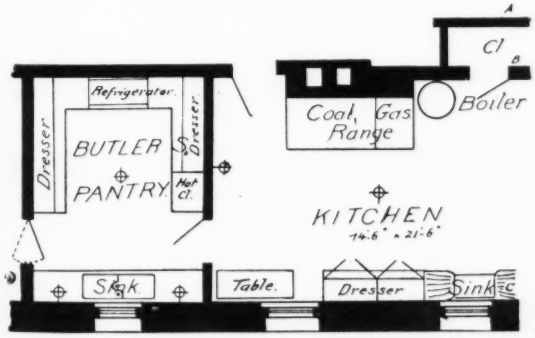

Fig. 13. A country house kitchen, with adjoining butler's pantry. The other parts of the service department which join at A, B, C, and which contain the refrigerator, servants' hall, laundry and servants' porch will be shown in Chapter VIII on "The Laundry."

rack, towel racks, and the various cooking utensils, pots, pans and dishes of copper, iron or agateware, too numerous to mention in detail.

Every kitchen should have provision for ample table room; this usually comprises a center table and a side table placed near the window (see plans). The tops of tables in luxurious houses and in some modern hotels are made of marble or of white opaque glass. I shall leave the cooking range for special consideration further on.

A meat block for the chopping and cutting of meat is a great convenience in a large kitchen, and sometimes houses have in addition to the cooking range a spit for the roasting of large pieces of meat before an open fire, the spit being turned either by clockwork or by electricity.

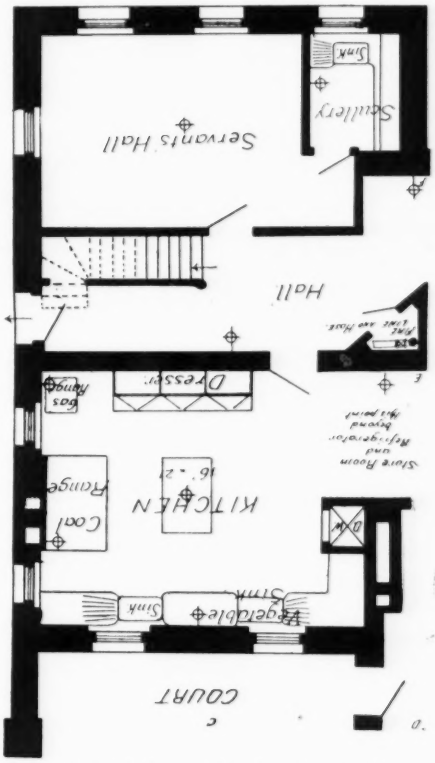

Fig. 14. Part of the service department of a country mansion, showing kitchen, servants' hall and scullery. The laundry and storeroom of this house, which join this plan at A, B, C, D, E, F, will be illustrated in Chapter VIII.

It is not necessary to consider in detail the many other pieces of furniture which may be provided for a kitchen, all of which are intended to expedite the work of the cook. There should be a large dresser with shelves, drawers and closets, and preferably with sliding glass doors. A center iron rack placed over the large kitchen table, suspended from the ceiling and having a number of hooks for hanging pots, ladles and pans, is a great convenience. There should always be a towel rack and a special rack near the range for the drying of the dish towels.

KITCHEN SINK.—The next important piece of "set" furniture is the kitchen sink, which may be either of iron, soapstone or of porcelain. It should be generous in size and fitted up with hot and cold water faucets and with a splash-back. The sink should also have one or two drainboards made of narrow strips of ash, oak or maple, which are clamped together so as to be watertight. It is preferable to arrange the drainboard with hinges so that it may be turned out of the way to clean the sink and the wall. The sink should always be set in an open manner; to arrange for a closed pot closet under a sink is not nowadays considered good sanitary practice. In large kitchens a second and deeper vegetable or scullery sink is often provided (see Figs. 2, 3, 10, 11, 12 and 14).

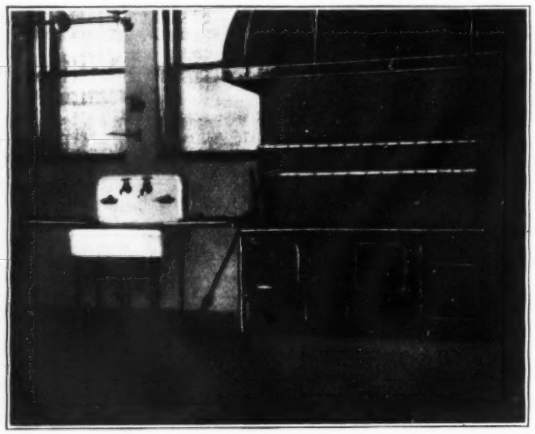

Fig. 15. View in a kitchen, with tiled walls, showing open-set "French" range with hood, and sink with two hinged drain boards.

KITCHEN BOILER.—The kitchen boiler, a cylindrical closed tank of either galvanized iron or of copper, is usually set up alongside of the range in a vertical position, though in some kitchens we find the boiler suspended horizontally over the range (Figs. 5 and 6). By a clever arrangement of the plan of some houses a closet is provided adjoining the kitchen and in the immediate vicinity of the range, in which the kitchen boiler is set. This has the obvious advantage that the heat of the kitchen is not unduly increased by radiation from the boiler.

In recent years it has become quite a customary practice to do away entirely with the kitchen boiler and to substitute for it a hot water tank in the cellar heated by steam coils, or by a special coal or gas burning hot water heater.

STOREROOM.—Adjoining the kitchen there should be a roomy storeroom or closet for the storage of dry groceries and other food, bought in large quantities and at wholesale prices; in this closet there should be plenty of space for barrels and boxes, for flour bins, and also some drawers and cupboards. Sometimes a special closet is provided for brooms, pails, mops, for ironing boards and the laundry wringer; in other cases we find a special pot closet provided.

SCULLERY.—In some of the larger houses a scullery is arranged immediately adjoining the kitchen, for the washing, rinsing and cleaning up cups, plates, pans and dishes (see Figs. 10 and 14). Here also the meats and vegetables may be prepared for cooking, and for this reason a scullery sink is quite an essential fixture of the room. This sink is usually made deeper than the kitchen sink, and provided with plug or standpipe overflow to hold water. The walls and floor are finished much the same as those of the kitchen.

COLD STORAGE ROOM.—In the hall outside of the kitchen a cold storage room, or else the large kitchen refrigerator, should be set. Such a refrigerator for the storage of food can be rendered particularly inviting and sanitary by lining the interior with white glazed tiles and providing glass shelves.

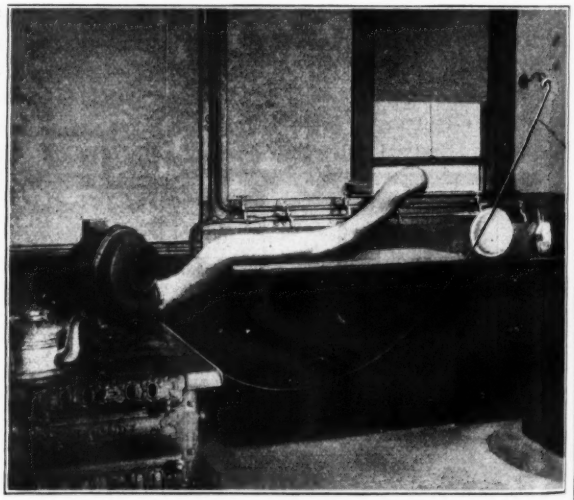

Fig. 16. A "ready-to-run" portable ventilating set exhausting cooking fumes from kitchen.

BUTLER'S PANTRY.—The kitchen should never communicate directly with the dining room, but there should always be a butler's pantry between the two, connected with the kitchen either by a

sliding window (Fig. 3) or, if on the floor above, by a dumb-waiter (Fig. 4).

The pantry should have a sink, a plate warmer heated by steam, gas or electricity, a small refrigerator, a steel safe for the silver tableware, a roomy closet for table linen and large china closets for the china and glassware and the table dishes.

In small houses and in cheap apartments the kitchen itself also contains a set of washtubs (Fig. 8). Wherever possible, however, no laundry work should be done in a kitchen and a special laundry room is always to be preferred (see the examples).

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Kiln Drying Lumber—I

By Chas. L. Hubbard, of Auburndale, Mass.

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The application of steam heat to the drying of lumber and other substances is so widely practiced at the present time that the design and installation of kilns and other drying apparatus is necessarily considered as a part of the work coming under the charge of the heating and ventilating engineer. For this reason something in regard to the drying of lumber by artificial means may be of interest to readers of "Domestic Engineering."

Before taking up the various kinds of apparatus used for this purpose, let us consider briefly some of the obstacles to be overcome and the results sought for in this process.

In drying fabrics or chemicals, all that is necessary is to provide sufficient heat to vaporize the moisture and enough circulation of air to carry it away, and the quickest and most convenient means to these ends may be used.

In the case of wood, whether in the form of standard stock, or the finished product, special precautions are necessary to prevent loss of strength or distortion of shape, and the application of the requisite heat and circulation of air must be carefully regulated throughout the entire process. The drying of lumber is an art which requires much experience, as the conditions vary so greatly with different kinds of wood, and even with the same kinds which are to be used for different purposes, as for example, in the case of plain and quartered oak, which require quite different treatment. The moisture in green lumber is called the sap; this is not pure water, but contains many substances in solution. All conifers, such as pines, cedars, junipers, cypresses, spruces, etc., contain resin, while deciduous trees, like oak, maple, birch, chestnut, ash, walnut, etc., lack this element, but contain others which for the most part are of the nature of sugar. There is one element, albumen, which is common to both classes of trees.

Part of the moisture is closely held in the material of the cell walls, and cannot be removed without affecting the physical condition of the wood; the rest, which fills the pores of the wood, is free water. In drying, the free water first passes through the cell walls until they are empty; after this the walls themselves give up their moisture.

Heat does not drive out the resin contained in pine and similar woods, but causes it to harden. In this state it is only slowly soluble in water, and being composed largely of carbon, is rather a benefit to the lumber than otherwise.

The substances contained in the sap of deciduous trees have a strong attraction for water and so retard the process of drying and also absorb moisture into wood already dried. High temperatures, especially those produced by live steam, appear to destroy these organic compounds, and therefore both to retard and limit the reabsorption of moisture when the wood is subsequently exposed to the atmosphere.

Air-dried lumber under ordinary atmospheric temperatures, retains from 10 to 20 per cent of moisture, whereas kiln-dried lumber may have no more than 5 per cent as it comes from the kiln.

These figures will of course vary under different conditions of the atmosphere and temperature of kiln. It seems to be true, however, that kiln-dried wood, when exposed to the atmosphere, fails to reabsorb as much moisture as that already contained in wood air-dried in the same place and under the same conditions.

To obtain satisfactory results, the drying must commence at the heart of the wood and work outwardly, the moisture being removed from the surface as fast as it exudes from the pores of the wood. Soft woods are much more easily and rapidly dried than hard woods, hence the latter will be more carefully considered in the present article.

One of the important items to be considered in the kiln-drying of lumber is the time required. This will vary greatly according to the kind of wood and various local conditions. Taking 1-inch plain white oak as a standard, other varieties of wood may be compared with it. As a rule, this is dried from one to two weeks, although in many cases this length of time is doubled. Again, at many of the larger and more progressive plants,

especially those drying hardwood flooring, it is reduced to from three to five days.

The time of drying differs widely with the species as well as with the use for which the lumber is intended. Quarter-sawed oak usually requires half again as long as plain oak, mahogany requires about the same time as plain oak; ash dries in a little less time, and maple, according to the purpose for which it is intended, may be dried in one-fifth the time needed for oak or may need a slightly longer treatment. For birch the time required is from one-half to two-thirds, and for poplar and basswood, from one-fifth to one-third that required for oak.

The variation in cost is even greater than the time required, running from .75 cents per thousand feet in the larger and most efficient plants to $5 per thousand feet in smaller plants, where the economies are less carefully studied.

Dry kilns at present are constructed and operated to a considerable extent without proper system and care. This is especially true where methods are copied by one woodworking plant after the example of some neighboring establishment. The most progressive operators, however, have experimented until they have been able to secure the special results desired for their particular product. Also the leading builders of drying apparatus have experienced drying engineers in their employ who have studied the subject extensively under actual working conditions.

Most hardwoods are kiln-dried before being made into the finished product. The high degree of strength and stiffness required in vehicle and implement stock are impossible without thorough drying, and this is now most quickly accomplished in a kiln. This is also true as regards lumber used in furniture and interior work where a fine surface finish is desired. Great care is required in the seasoning and preparation of lumber, else numerous defects

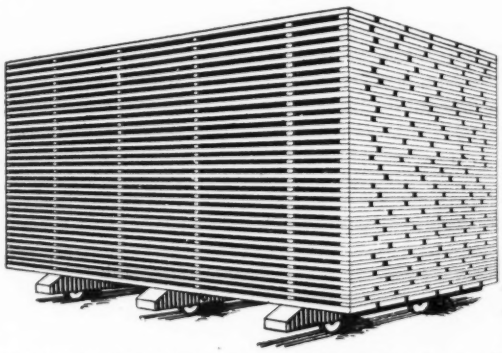


Fig. 1. Showing proper way of piling lumber on trucks for kiln-drying.

will result, the most important of these being warping and twisting, checking, case hardening and honeycombing. Warping and twisting is quite as great in air-drying as in kiln-drying and is especially noticeable in such woods as the red gum and tupelo. The remedy for this lies in proper piling, which should be done with great care. Fig. 1 shows the correct way of loading the lumber upon the trucks. The cross sticks should always be placed over the trucks and follow a perpendicular line. It is also good practice to place sticks at the very ends of the pile as shown. Too rapid drying will cause the ends of the lumber to open in deep checks. These, however, are often caused by air-drying and simply opened up by the kiln.

Case hardening, so-called, is caused by pushing the drying process too rapidly without taking the proper precautions. Under these conditions the surface becomes dry and impervious, while the interior remains moist. Thorough drying under these

"Empireites from Buffalo." This jolly delegation from the Empire State was a welcome addition at the recent Detroit convention. Photograph by our Mr. Winslow.

conditions is impossible and the attempt usually results in honeycombing. This is shown in cross section in Fig. 2 and occurs only in connection with case hardening. It is an internal checking in which the checks, following the medullary rays of the wood, may run nearly from end to end of the piece, but do not, except in extreme cases, show on the surface.

Before referring specifically to the drying of lumber, it may be well to consider briefly the action of evaporation, or drying, in a general way without reference to any particular substance.

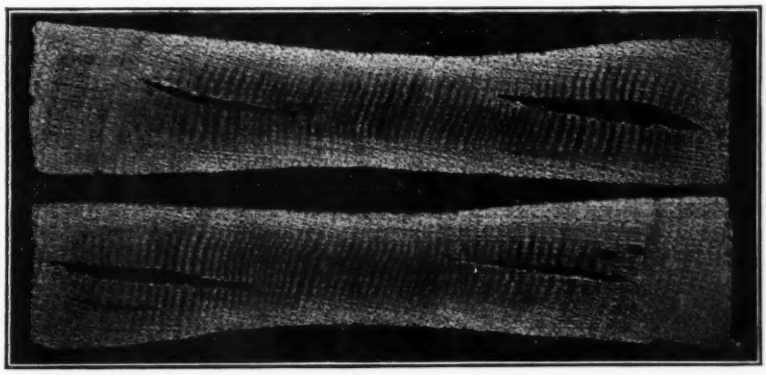


Fig. 2. Shows result of pushing the drying of lumber too rapidly.

Two things are necessary in drying, heat and escape for the water vapor as it is formed. To change water into vapor requires a definite amount of heat regardless of what the process of drying may be. To evaporate a pound of water into a vapor at 60 degrees temperature requires 1,072 heat units. This vapor produces an absolute pressure of one-fourth pound per square inch, and 1,000 cubic feet weighs 0.82 of a pound.

To evaporate a pound of water into vapor at 212 degrees requires only 966 heat units, but produces an absolute pressure of 14.7 pounds per square inch, which is just equal to that of the atmosphere; 1,000 cubic feet of this vapor weighs 40 pounds. The presence of air has no effect upon the production of water vapor; evaporation will proceed in the same way, whether air be present or not. That is, in the first case, evaporation will continue at 60 degrees temperature until each 1,000 cubic feet of space contains 0.82 of a pound of vapor. Evaporation will then cease unless the vapor is removed. If air is present, it is said to be saturated when this condition is reached.

Although air does not absorb the moisture it is necessary for carrying away the vapor, which, owing to the low pressure which it exerts below 212 degrees, is held in place by the greater pressure of the atmosphere. At a temperature of 212 degrees the water vapor is able to push the air away in a body before it, as from the outlet of a steam boiler, and evaporation under such conditions is called boiling.

Unless drying is carried on at a temperature of 212 degrees, or over, a forced circulation of air, either by means of flues or a fan, is a great advantage, as the current of air thus produced carries away the water vapor as fast as formed and thus allows more vapor to be produced by evaporation. As the amount of water vapor commonly present in the atmosphere is somewhat less than that corresponding to saturation at the temperature of the atmosphere, there is room for more vapor, which moist or wet objects will endeavor to supply, even though the heat required to evaporate the water should reduce their temperatures somewhat below the prevailing temperature. The movement of air not only increases the rate of drying by removing the vapor as it is formed, but also hastens evaporation by supplying more heat to the drying object. The evaporation of but 1 ounce of water from a pint would reduce the temperature of the whole quantity from 96 to 32 degrees, the freezing point, were no outside heat supplied.

In the drying of lumber, the first step is to raise the temperature of both the wood and the water which it contains to the degree at which drying is to take place.

If the wood is slowly heated and there is a sufficient circulation of air to carry away the surface moisture as fast as it is vaporized, the surface will become entirely dry before the internal moisture is even moderately heated. Again, if the stock has been partially air-dried, it must be remembered that this same condition still holds and the interior will contain a considerable amount of moisture, while the surface is apparently well seasoned. It is necessary, therefore, that surface drying be delayed in the kiln by retaining the moisture first vaporized about the wood while continued heat penetrates to the internal moisture.

Steam is often used to thoroughly heat and wet

the wood before drying actually begins. Although this increases the amount of water to be evaporated, it shortens the time required for drying by quickly raising the wood to the drying temperature.

After being thoroughly heated and the surface made permeable to moisture, drying may be forced by artificial circulation, provided the heat lost through evaporation is replaced by the heat of the kiln. The process is finally completed by admitting hot unsaturated air to contact with the heated wood and replacing it constantly as it becomes saturated. The most efficient rate of air circulation and the proper humidity depend largely upon special conditions and must be determined by experiment in any particular case. If the internal moisture is kept moving toward the surface as rapidly as the surface moisture is removed, the regulation of air volume and humidity is easily controlled.

Bath Tubs

By Phoenix

Back in the olden days, when the world was not burdened with so many laws and theories upon sanitation, tax collectors and the jokes relative to the plumber were just sprouting beards; mighty few fixtures and even less apparatus were the fashion of the day.

About the **first authentic record of a bath tub** appears to come from Grecian history. The bathing vessels of this highly intelligent and cultured people were made of polished marble and appear to have been in

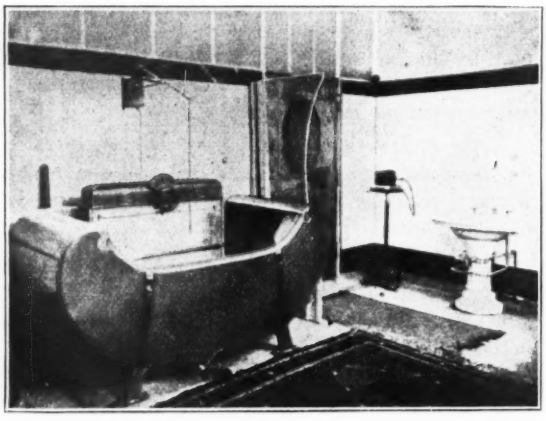


Fig. 44. Mechanical Wave Bath, invented by a French nobleman. Illustration from "Modern Baths and Bath Houses," by Wm. Paul Gerhard.

shape somewhat similar to a huge punch bowl standing about thirty inches high and supported upon a pedestal.

The bather did not use this tub after the modern fashion as the tub was merely used to hold the water which was applied to the bather by attendants. The Greeks were partial to the use of cold water in which practice they differed much from the Romans whose bathing establishments finally became marvels of luxury and convenience.

The Roman bath tubs were generally cut from a single block of marble or granite, and were polished. In France, also, this same form of tub was found, and as the tubs were cold and hot water none too plenty, it was customary to place a sheet in the tub which custom is said **to still prevail,** in this twentieth century in France, which would seem another queer survival of "doing things as Dad did."

Another queer bath tub of long ago was shaped something like a gigantic slipper. This form of tub was in use about the time of the American Revolution and is said to have been used extensively by Benjamin Franklin, who, from all reports, seems to have been as much ahead of his time in sanitary matters, as he was in many other things.

Ben Franklin believed thoroughly in the beneficial effects of frequent baths, and this same doctrine could be adopted with huge benefit in many communities not a thousand miles distant from Chicago.

In this slipper bath tub the bather was compelled to sit upright, the covering appearing to be used to prevent spilling the water, which seems to have been cared for most preciously in those days.

Another curiosity is a mechanical wave tub which is said to have been originally invented by a nobleman from France, and has been used somewhat in Germany in recent years. This tub resembles somewhat in form and action certain patent churns of the present day and is intended to produce a wave motion, by mechanical means, such action being deemed more or less beneficial from a medical standpoint. A picture of this curious tub is shown in figure 44.

A modern bath tub should be so constructed that the inner surface is smooth, easily cleaned and the material composed of such a substance that will not rust or absorb dirt.

Bath tubs are, and have been made from many different kinds of materials. Comparatively speaking, it is but a short time since wooden bath tubs were used, which were most effectively boarded up and nailed into the room.

The wood absorbed dirt and filth and the cracks afforded fine berths for the cockroaches. A musty, unpleasant odor appeared in time, due to lack of circulation and sometimes also to the rotting wood.

Then came the copper and zinc, wooden rimmed tubs which for some time held forth, but were found to be too weak and finally the **cast iron and porcelain tubs made their appearance.** A cast iron tub may be painted, galvanized or porcelain enameled.

In these later years the process of enameling iron has come to a surprising degree of perfection and the modern iron porcelain enameled tub nearly equals in appearance the solid porcelain bath tub of high quality.

The luxury, convenience and beauty of a modern bath room will be apparent to all when the fixtures as shown in figure 45 are examined.

The system of open plumbing as practiced today by the best masters of the craft will so furnish a bath room that it may be the cleanest room in the house,

and these modern fixtures can be as easily cleaned as any piece of ordinary china ware. The first few days' use of a tub in a new bath room may be somewhat unpleasant, due to the fact that the plumber **has persisted in the pre-Christopher Columbus habit of using white lead, or some other unpleasant substance** in making up the joints of the water supply pipes. It is to be hoped that, **some day,** the journeyman will learn that **white lead, on the inside of a pipe never yet stopped a leak.**

This "dope," particularly from the hot water pipe, gets into the bath tub and causes caustic comments by the householder.

The best course to take in such a case is **to prevent the lead from entering the tub, lavatory or sink.** Wrap

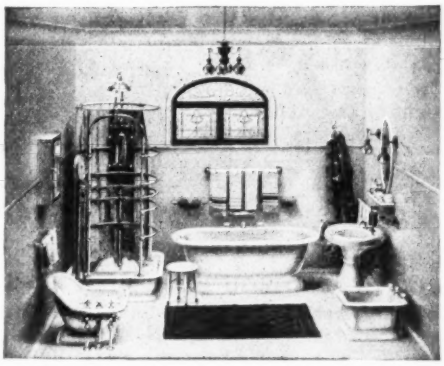


Fig. 45. A twentieth century bath room, showing the beautiful fixtures used in this progressive age. Reproduced from "History of Sanitation" by J. J. Cosgrove.

a towel around the supply faucet and thus **strain the water entering the tub** and the lead will all be found in the towel. In many instances the waste pipe of the tub is connected to that of the lavatory, which can not be said to be the best practice, as either fixture may thus put the other out of business in case of a breakdown.

There are few ordinary bath rooms so planned that it would be impossible to run **a separate** waste for each fixture, **provided some person gives the matter sufficient forethought.**

Each fixture should have a separate waste into the soil pipe line. Likewise each fixture should (if possible) have a separate vent into the main vent. When the matter is studied carefully it will be seen that these are advantages which can not be too greatly overestimated. In spite of the fact that in a large number of places the waste to the lavatory is wiped into the lead bend of the closet, this practice is not to be commended from any point of view, only sheer necessity, as it is sometimes impossible, through lack of space, or bad planning upon the part of the architect, to obtain a separate waste for each fixture. The rough outside of the bath tub, with a little care, can be finished up very neatly and in color to correspond with the general tone of the bath room, as follows: remove all the little uneven projections. Sometimes if the tub is an unusually smooth one, this can be done by merely rubbing it with a piece of emery paper. It may be necessary, however, to clip off the uneven places with a sharp cold chisel. The chisel should not be allowed to cut in deeply. Merely run that chisel over the outside of the tub as if you were planing the surface. Then rub down the surface with the emery paper, being careful to rub the sides in the same direction and not to cross the grain, as it were.

After the surface is sufficiently smooth a coat of lead mixed rather thickly may be applied. This will be the better if some zinc is added, and if required to dry soon, a little dryer may also be added to the mixture. Possibly two or three coats of paint will be required to bring the tub up to a good standard appearance. Then, when the tub is possessed of a smooth, white, even appearance, color with a coat of enamel, and the surface will present a glossy look very lasting and beautiful.

Noises in Pipes

Additional comments on the query recently published as to sound travel in pipes supplying water to a building.

R. H. Meyers, Plumbing Inspector, Stratford, Ont.

Referring to the question of sound travel, I would like to state that I have not heard of any trouble with soil pipes except when plumbers have been at work, but in the water supply pipes we are up against it often, in fact we have come to think of it as a necessary evil and we would certainly like to know if it can be abated.

I do not know as I can throw any light on this matter, but will relate a little experience I had some five years ago, that ended **without results practically,** because the government expropriated my residence, with other property, for an armory site.

There was a lane between me and a clothing factory 12 feet wide, a half inch water supply pipe from a four inch main, ran sixty feet up this lane to where it branched into the factory, then twenty feet farther up it entered my house, terminating with compression stop and waste. That winter being very cold the water closet in the factory was propped open to keep it from freezing, and the noise in the dead of the night annoyed us to such an extent that we could not sleep, and one midnight I went to disconnect the pipe, when lo: the closing of the compression cock stopped the noise, showing that the sound travelled by the water.

John E. Harbison, Inspector of Plumbing, Schenectady, N. Y.

In reply to the request for suggestions as to the probable cause of the travelling hissing noise existing in the supply and soil pipe of the hotel described as a three-story brick building with three-quarter inch iron supply pipe and four-inch soil pipe, I present the following:

The information given, as to the details of the installation of the supply and soil pipes, is not sufficient for one who has not heard the noise to which you refer or even seen the building, to give a definite cause of the trouble, but I do not hesitate to say that it is

either due to the manner in which the supply pipes are installed or defective faucets or tank valves.

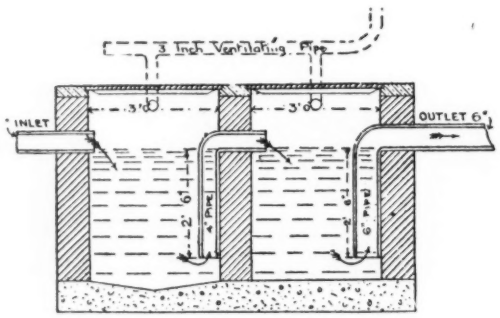
As sounds always come from vibrations, anything that produces sound must vibrate, therefore water in itself will not make noise, but when running water comes in contact with some other material or mechanism that is not fastened tightly and has room in which to move, an adjustment in the flow of water sets up a vibration in the material with which it comes in contact. Therefore I think if a very careful inspection of the supply system is made the trouble can be found and rectified.

Possibly the three-quarter inch supply pipe is fastened direct to the floor timbers in some places without the use of non-conducting material between the pipe and wood, and without the fastening of the upright pipes in the partitions. In the first instance, the floor timbers or flooring acts as a sounding board, in the second, the loose pipes vibrate and probably come in contact with the soil and waste pipes and the sound continues along the whole system.

I do not at all approve of the installation of the suggested water supply system for the addition or annex to be erected, and think it a wasteful expenditure of money, and I do not think the idea of either increasing the size of the supply pipe and running it to the top and down again, or of boxing and packing the pipe should be seriously considered. If the supply system is carefully and properly installed by competent workmen, the best material such as faucets, pipe hangers, fasteners and stop valves are used, and the plumbing kept in perfect repair, there should not be any trouble experienced as in the above-mentioned hotel.

FLOOR DRAINAGE IN A GARAGE.

This is an illustration of the method in which floor drainage in a garage is cared for in British practice The floor drain enters from the left into a double compartment, settling tank and cesspool, which has



Sketch shows British practice in caring for floor drainage from a garage.

a tight cover and is furnished with a 3″ ventilating pipe to the roof. The first compartment has a depressed floor, making it more easy to remove the sand and mud, a turn down elbow of 4″ pipe with a seat of 2 feet 6 inches, which leads into the second compartment, where a 6″ turn down elbow with a seal of 2 feet 6 inches leads to the main drain. It is quite improbable that the gasoline would reach the sewer if such a settling tank and cesspool as this were constructed.

Questions and Answers

This Department is maintained for the use of every reader of "Domestic Engineering." We solicit problems from you and will give them our best attention. In stating your questions please give all of the facts as clearly as possible and when necessary accompany your question with a correct layout of the job.

WEIGHT OF CAST IRON SOIL PIPE PER FOOT.

169. **Shamokin, Pa.**—To the Editor of "Domestic Engineering." Sir: Will you please give me some information as to the weight per foot of cast iron soil pipe, as this would be handy to paste over my desk. —K.

Weight of cast iron soil pipe per foot.

	Extra heavy.	Standard.
2″	5½ lbs.	3½ lbs.
3″	9½ "	4½ "
4″	13 "	6½ "
5″	17 "	8 "
6″	20 "	10 "

HOW WOULD YOU HAVE BENT PIPE?

170. **St. Joseph, Mo.**—To the Editor of "Domestic Engineering." Sir: The other day I was out in the country, about ten miles from anywhere and had occasion to bend some pipe. My vise was too small to properly hold the pipe, so I simply pounded the pipe against a tree and got the required bend. What would you have done in such a case and without any bending spring along either? F. H.

In such a case if the writer had had a bench set up, he would have taken his brace and bit and bored a hole in one of the scantling used in supporting the bench and thus obtained a purchase whereby he could havs acquired almost any bend, or offset required if for iron pipe. If no bench was used I would have looked for a fence post not too prominently located and bored the hole in the post. Of course lead pipe would have kinked without the bending spring but it would have been an easy matter to pack it with sand and plug up the ends, and with a little care the required bend or offset could be obtained.

THE USE OF LEAD PIPES FOR HOT WATER.

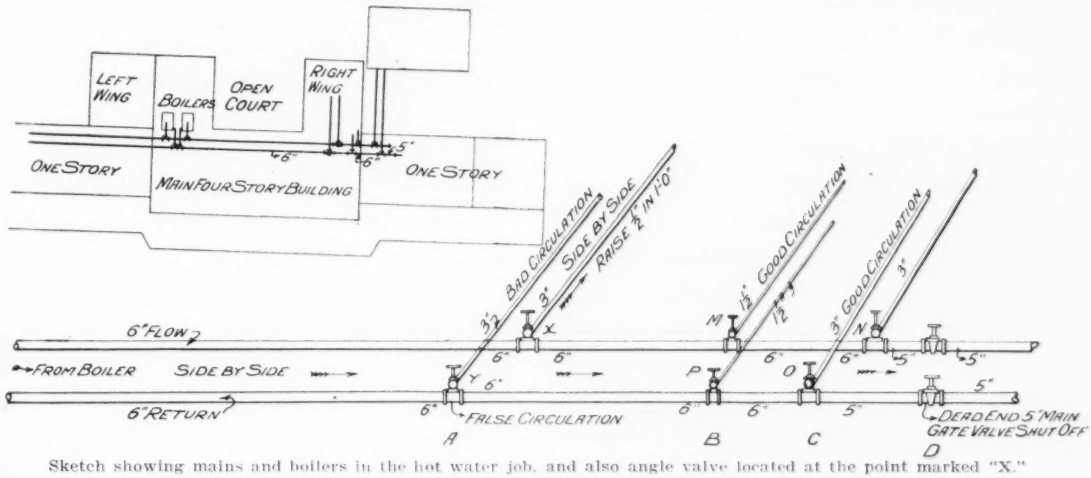
173. **Dallas, Tex.**—To the Editor of "Domestic Engineering." Sir: Many years ago the connecting pipes between the range boiler and the water front were mostly of lead pipe, but apparently this has been almost wholly done away with. Can you give any good reason for this, or is it simply due to the increasing number of plumbers who, today are unable to manipulate the lead with the old timers skill? Please answer in your next issue. "Old Timer."

It has been found in the general practice of the craft that lead pipe was not suited for hot water connections because of its unequal expansion. It expands all right enough, but when the cooling takes place it does not contract to its original length. This produces ine-

qualities, sags, and in due time, ruptures, which do not obtain in iron pipe. Again, should the water in the range boiler by any carelessness or mishap chance to be siphoned out the lead pipe or joints are in danger of melting from the heat of the fire.

REGARDING THE TROUBLE IN WHICH EXPERTS DISAGREED.

Aurora, Ill.—To the Editor of "Domestic Engineering." Sir: In reading Domestic Engineering for June 12, 1909, I notice the article, "Here is trouble over which experts disagree," and I would like to suggest drawing the water through the air vent from a radiator on the first floor of the bad circulation line "X Y," as shown on the sketch. This will start the circulation, if the water is hot you can tell which pipe circulates. If pipe "X" does not circulate **then,** I would



Sketch showing mains and boilers in the hot water job, and also angle valve located at the point marked "X."

seal the expansion tank, make everything tight, reduce the fire and then remove the bonnet from angle valve "X." The vacuum in the system will not allow much water to come out and the valve can be examined without emptying the water from the system.

Yours, **W. F. J.**

Chicago, Ill.—To the Editor of "Domestic Engineering." Sir: In relation to the problem presented in the bad circulating hot water job and drawings published, page 327, issue of June 12, '09, I would say that from the report of Mr. E. F. it seems that the pressure at the point "X" is strong enough to supply the water to the radiators, for this takes place when the return valve is almost shut off. At the very same time the pressure head is not strong enough to overcome the resistance, as free circulation can not be reached by the same experiment. Consequently the question arises as to whether or not the valve and pipe are void, or the pipes are not of the proper size. The possibility is that the first conclusion is more liable to be true, for, should the second be the case, at least a part of the radiators near the starting point would work well.

Yours truly,
Isaac Chaimovitsch, M. E.

MANNER IN WHICH TO ESTIMATE THE HEATING CAPACITY OF A JOB IN HOT WEATHER.

171. Hazleton, Pa.—To the Editor of "Domestic Engineering." Sir: Can you inform me of any reliable method of telling whether or not the radiators will heat the rooms sufficiently, when the test is made during hot weather? Of course one can estimate the amount he thinks necessary to heat the room and experience teaches us all, more or less, in due time, but it seems to me that there should be some table of relative temperatures so we could close up a room and know from a comparison of temperatures about where we would be at. Trusting to see an answer soon in the columns of your valuable paper, I remain, **L. A. W.**

Carpenter gives a table upon page 116 in his book on "Heating and Ventilation of Buildings," in which it is assumed that the temperature of the radiator is that due to three pounds pressure of steam or 220 degrees. Acting upon that basis he gives the following table which we reproduce, partially, for your benefit and trust that you may find it useful. It was also assumed that the radiation was sufficient to heat the room or rooms 70° Fahr. when the thermometer stood zero outside.

Temperature of the air outside.	The resulting temperature of the air in the room.
—10	64.7
0	70
10	75.1
20	81
30	86.5
40	93.1
50	98.7
60	104.7
80	117.1
100	130.3

HOW TO RETURN WATER TO BOILER BY TRAPS.

172. Elmira, N. Y.—To the Editor of "Domestic Engineering." **Sir: I wish that you would illustrate the use**

of two steam traps in returning condensation to a boiler as this is a question upon which I would be pleased to receive any information you can impart.

G. B.

In the accompanying illustration a tilting trap is pictured showing the position and connections of the traps properly "hooked up" so that they may return the condensation from the job to the boiler. The water from the job enters the receiver (which is the small tank shown just above the lower trap) and from the receiver passes to the lower trap. When this lower trap has received sufficient water to cause it to tilt, it performs this operation and forces the water into the upper trap located on top of the boiler.

When the upper trap is sufficiently full it tilts **and in so doing, opens a steam valve** thus admitting the **boiler pressure to the trap and the water in this trap then passes into the boiler by gravity.**

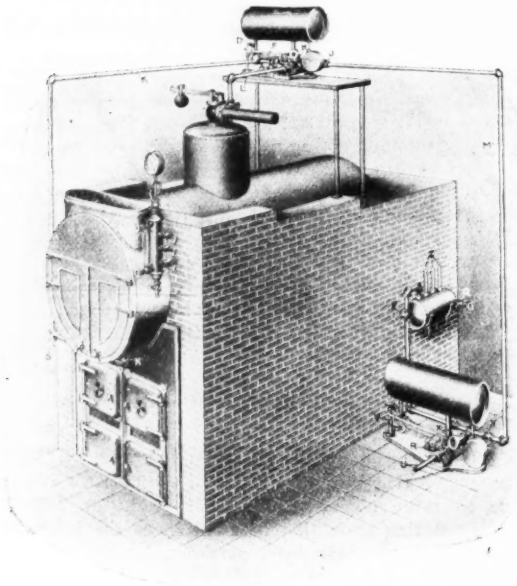


Illustration showing the "hook up" of a pair of steam traps used in returning condensation from a steam job to the boiler.—Illustration reproduced by courtesy of the Moorhead Mfg. Co., Detroit, Mich.

This point is one which is not thoroughly understood by steamfitters and it is hoped that the explanation is sufficiently clear, and will enable any one reading this to understand just how the water can be safely and automatically put back into a steam boiler by a steam trap.

GOOD FOR MAN OR BEAST.

Pasadena, Calif.—To the Editor of "Domestic Engineering," Sir: We are sending you a photograph of "Flush," our pet shop dog. A peculiar incident occurred in connection with taking this picture, and we agreed that a copy of it should be sent you. When we called "Flush" to pose for his picture he immediately picked up a copy of "Domestic Engineering" and with it in his mouth came running to us. We experienced no difficulty in inducing him to sit quietly

Everybody in this shop likes "Domestic Engineering."

and look pretty. You can see how content and natural he seems.—**The Shop Boys of George T. Downing.**

VETERAN'S LONGEST ENGAGEMENT.

At the Army and Navy club in Washington one evening a group of officers, most of them young men, were swapping stories of various engagements during the war with Spain and the subsequent troubles in the Philippines.

Among the silent listeners was one grizzled veteran, a naval commander of national renown. It must have occurred to one of the young men that it was peculiarly ludicrous that officers not long out of the academies should be holding forth with respect to their exploits, while this old fellow sat silent in a corner. So, turning to the veteran, one of the young officers blithely asked:

"What is the longest engagement you ever participated in, admiral?"

"It lasted three years," said the old chap, without a suspicion of a smile, "and, worst of all, the young woman married another man."—Washington Post.

Accurate Information.

"Have you seen my wife in this store, Mrs. Malaprop?"

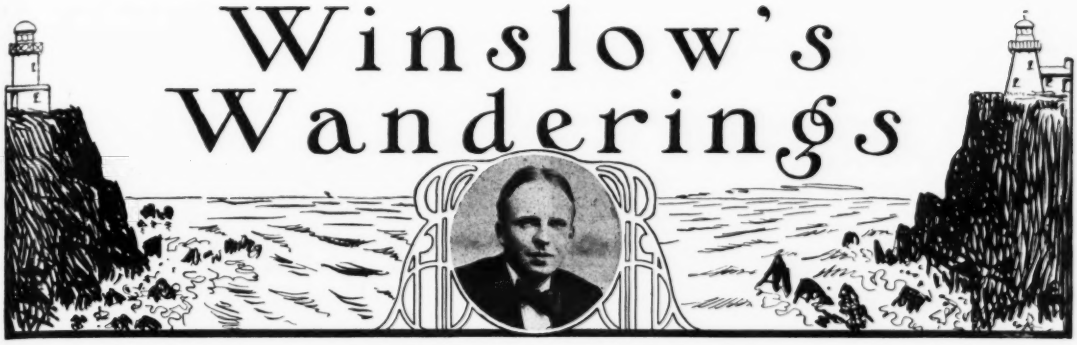
"Yes; she's gone to the waiting room on the mezzotint floor to foam for your cheffonyer."—Baltimore American.

A Job for Him.

"Did I ever tell you about my boy? That kid is sure a record breaker!"

"Sure enough? Send him over and I'll let him play with our phonograph."—Houston Post.

Winslow's Wanderings



A GLIMPSE OF HAVANA.

(Conclusion)

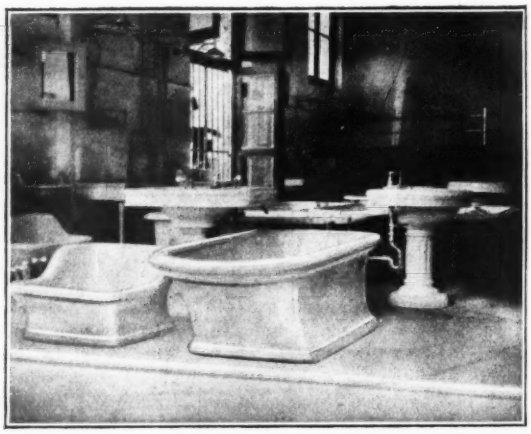
The following night I sauntered into the **Frontón** where is played the famous gambling game **Jai Alai** (pronounced Hi Li). In ancient times it was the village sport of the Basque Provinces, but for more than a century it has been played chiefly by professional players as a popular spectacle for betting purposes. It is played in Madrid, Navarre and other Spanish cities, but has lost something of its popularity because of more stringent police regulations against gambling. It is one of the most wildly fascinating and exciting spectacles of human endurance, agility, high training and superb skill that one could ever hope to witness. The Jai Alai player dies young, occupying in the community a somewhat similar position to the base ball player of our country. In comparison a horse race is but a tame diversion, though books are made on the game in the betting ring in a somewhat similar fashion. Every visitor to Havana becomes fascinated with Jai Alai and I was no exception.

This is an interesting photograph taken on the ramparts of Morro Castle, from which "I had a view well worth coming from Havana to behold, over harbor and town and gulf."

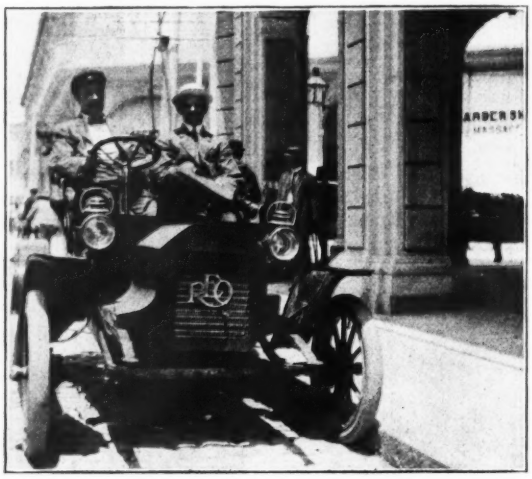
Bright and early the next morning I set out to inspect **Morro Castle** and the old fortress of **Cabaña.** At Caballera Wharf I boarded a harbor boat and was rowed to the opposite shore. The ascent to the entrance of the fortress is by an inclined road, which is shaded by royal Poincianas and laurels, and hedged with impenetrable cactus, above which tower the moss-grown walls. I crossed the moat by a drawbridge and all about me were prison-like rooms, casemates, storerooms, kitchens, magazines, bomb-proofs and dungeons, with grated and dark recesses. The walls

These gentlemen are familiar figures along the Prado and the Malcon, and with the plumbing supply trade of Havana. They are, from left to right, Sig. Fermin Lizaso —associated with the prominent firm of Alió, Fernández y Ca.—and Mr. Morris, the popular assistant manager of the Union Foundry Company, of Anniston, Ala.—Photograph by our Mr. Winslow.

are of formidable heights, the ditches of astonishing depths. It was not at all a cheerful place, and when I came to a narrow, steep, high-stepped stairway descending into the interior depths, I felt no desire to explore its mysterious darkness, but turned instead to



The plumbing establishments of Havana carry large stocks of material and are equipped to execute any class of work. This picture shows a corner of the attractive show room in the establishment of J. Henry Steinhardt. It will be noticed that a great deal of vitreous Chinaware is displayed. The photograph was made by our Mr. Winslow.



Here we see Joseph W. Cousin, sanitary engineer, with the Havana house of James B. Clow & Sons and Mr. Morris, assistant manager of the Union Foundry Company, Anniston, Ala., about to start for a spin along the Prado. In Havana particularly is this a very pleasant pastime. The photograph was made by our Mr. Winslow.

the more inviting way which lead to the ramparts. Here I had a view well worth coming from Havana to behold, over harbor, and town and gulf. On the seaward side I found myself directly over the sea and looking down into its clear depths, I could see the spot which evil notoriety has proclaimed "the shark's nest." Tradition has it that the stone chute which was built in the seaward wall for the disposition of waste and garbage, was also used as a tunnel through which the bodies of Cuban prisoners, who had been executed, were thrust into the nest of these hideous fish. **Morro Castle,** which was built over 300 years ago, is in part built on solid rock, and in part hewn out of the rock. It stands on a bold headland jutting out into the Gulf and is made particularly prominent by its light tower whose flash is visible eighteen miles at sea. It has withstood many a furious siege.

Bull fighting in Cuba is not permitted by the laws of that country, in spite of the fact that it is still an almost universal sport in many Spanish cities. At the

This is a uniquely decorated float arranged by the Havana house of James B. Clow & Sons, of Chicago, for a recent celebration held in the former place. It attracted very favorable comment and clearly shows what interest is being taken here in modern sanitation.

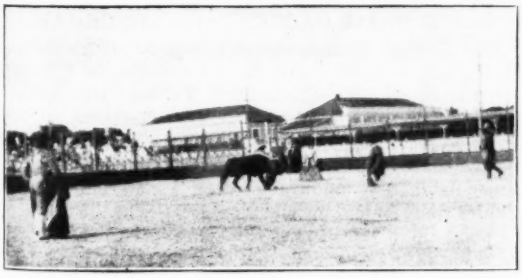
time of my visit, however, a party of Mexicans was in Havana giving an exhibition of this sport, without the viciousness which so characterizes it in their country. Accompanied by **Cristino F. Cowan,** sanitary engineer with the large contracting firm of Purdy & Henderson, I was able to enjoy an afternoon around this arena. The toreadors did not try to kill their vicious adversary, though they urged him on by means of the proverbial red cape. At intervals the bull would become enraged to the point of ferociousness, at which time his tormentors would take refuge behind wooden partitions that had been erected around the arena especially for this purpose.

But Havana, in fact the entire island of Cuba, offers many inducements commercially to the American. It it ripe for his invasion. **There are in Havana but six or seven establishments of importance contracting for plumbing work,** and all of these have a good abundance

of work on their books. More capital, in proportion, is required to do business in Havana, as goods are bought in large quantities. Large stocks of plumbing material are carried by James B. Clow & Sons, Purdy & Henderson, Pons y Ca, Alió, Fernandez y Ca and

These gay toreadors from Mexico were very popularly received during their recent invasion of Havana and the sport they furnished in the arena was very exciting indeed. The protograph was made by our Mr. Winslow.

J. Henry Steinhardt and these concerns are the principal factors in the plumbing industry in that city. Material is shipped by them throughout the island and a growing country is being thus supplied from its principal city. And then Havana is improving and enlarging its sewerage system and has in charge of all sanitary installations a competent inspector. One



Here we see the bull in all his fury, viciously attacking his agile adversary. The proverbial red cape of the toreador will be seen on the bull's horns. This is always an exciting moment and the danger which is naturally apparent only excites the spectator to even more fervor.

cannot help but notice the vast number of new buildings that have been and are being constructed in Havana each year. These are replacing many old Spanish edifices—relics of ancient days—and they are modern both in their design and in their equipment.

So Havana is truly becoming more and more each year a thoroughly cosmopolitan and active business center and the American spirit of hustle and enterprise which is permeating the business atmosphere of the place may be largely the cause of this desirable change. Our little neighbor is prospering and will continue to do so and it was a very great pleasure to me when I was able to spend a few weeks within her gates. I can truthfully term it a **"Land of Opportunity."**

Note.—The writer desires to express his appreciation to the prominent publicity firm of Foster & Reynolds, from whose **"Standard Guide to Cuba"** he was able to procure much useful and valuable information in the preparation of this article. **E. DeForest Winslow.**

A COMMUNICATION.

We have received the following letter from Ernest Howard Hunter, of 724 Mutual Life Building, Philadelphia:

"Gentlemen: There appeared in "Domestic Engineering" for June 12, 1909, an advertisement of the McCrum-Howell Co., Park avenue and 41st street, New York, which contains the following statement:

> "In the United States Circuit Court of Appeals the Fowler & Wolfe Mfg. Co. recently lost their suit against the National Radiator Co. of Johnstown, Pa., for infringement of this Fowler patent 609,800."

"This statement at the time of publication was absolutely false. The suit in question had been argued in April, but at the time of the publication of this advertisement no decision had been rendered. It happens that a decision was rendered in the case today by an opinion filed by Judge Gray, but the statement in the McCrum-Howell advertisement was at that time absolutely false. My clients feel that they are entitled to a proper correction from you, and understanding your position in matters of this kind to be that stated in your letter of May 14, 1909, to the Fowler & Wolfe Mfg. Co., have no doubt that you will make a proper correction and will give to it proper prominence in your journal.

"They suppose that you were unaware of the false statements contained in the advertisement, as they feel sure in view of the very proper position assumed by you in matters of this kind that you would not have permitted such a statement to appear in your paper if you had been aware of its falsity. Nevertheless you will appreciate that this does not relieve you of the necessity of making the proper correction now.

"Under this opinion filed by Judge Gray today, the radiators involved in the suit against the National Radiator Co. were held not to infringe upon the Fowler patent, but this was a suit against a licensee. The complainant's contention was that the radiator in question fell under the terms of the license. The question of the validity of patent 609,800 was not involved and could not in any way be affected by this decision.

Yours truly, Ernest Howard Hunter.

"I love my work."

"Now, be honest. Do you really love work?'

"Well, it's an extremely platonic affection."—Kansas City Journal.

RENO FREIGHT CASE INTERESTS FRISCO JOBBERS

Will lose large part of California and Nevada trade if Reno is allowed same rate as San Francisco

Central Tube Company, of Pittsburgh, expects to start operations in September

SAN FRANCISCO JOBBERS INTERESTED IN THE RENO FREIGHT CASE.

Jobbers in Plumbing and Heating Supplies in San Francisco are vitally interested in the decision of the Reno (Nev.) freight rate case because a large part of the business of Nevada and the mountain districts of California will be lost to them if Reno is allowed the same rates as San Francisco. At a meeting of the traffic bureau of the Merchants Exchange in San Francisco held last week, Traffic Director J. C. Stubbs of the Harriman lines made the following appeal to those present concerning this matter: "You must co-operate with the Harriman lines in its fight against the demands of Reno that the Interstate Commerce Commission give its shippers the same rate from the East as San Francisco enjoys if you want to preserve this city as a big jobbing center. It is your cause as well as ours; in fact if Reno should win out, the Harriman lines can take better care of themselves than your jobbers here will be able to. The Harriman lines always have contended and will always contend, and the Supreme Court of the United States upholds the contention that a seaport like San Francisco, because of sea competition, is entitled to low, or terminal rates, while because of no competition interior towns can be charged a higher, but reasonable rate. This is the basis of the freight rates structure, and by means of it and because it is in harmony with the natural advantages of a place like this, your city has become a great jobbing center. I want to see it prosper more than ever in that respect. But you cannot tell what the Interstate Commerce Commission may decide to do, and in the legal battle before the commission we want your help."

NEW TUBE COMPANY TO START IN SEPTEMBER.

The Central Tube Company, of Pittsburg, Pa., which was recently incorporated with a capital stock of $350,000, expects to place its new mill, for the manufacture of wrought pipe, nipples, etc., in operation early in September. Walter F. Ingals has been engaged as manager of sales for the company. He has had a wide experience, extending over eleven years, with the National Tube Company, and severed his connection with this company July 1st to take up his new duties. The Central Tube Company will be represented by Messrs. Olin, Giberson & Hilands, of 2 Rector street, New York, who will cover the New England States, New York, Eastern Pennsylvania, Virginia, Maryland, New Jersey, Delaware and the District of Columbia.

ENLARGING ITS CAPACITY.

The Cahill Manufacturing Company, of Worcester, Mass., manufacturer of brass fittings, is installing new and additional equipment in its brass foundry that will greatly increase its facilities..

VICTOR FLANGE COMPANY INCORPORATED.

The Victor Flange Co., Buffalo, N. Y., has been incorporated with a capital of $10,000, to manufacture flange and other plumbing supplies. Incorporators: Joseph S. Candee, 594 South Park avenue; Frank T. Reynolds, 525 Prospect avenue; Cornelius Coghlan, 407 Porter avenue, all of Buffalo.

CRANE CO. NOW IN CHARGE.

Crane Co., of Chicago, has now taken over the business of the Knight & Jillson Company, of Indianapolis, Ind., which it purchased some time ago, as reported in "Domestic Engineering" at that time. The formal transfer took place on Thursday, July 1. Claude McElwaine, formerly with the old McElwaine & Richards Company, of Noblesville, Ind., and later with the Central Supply Company, of Indianapolis, has been appointed manager of this new branch of Crane Co.

WILL MOVE ITS PLANT TO SOUTH FRAMINGHAM, MASS.

The Manufacturing Equipment & Engineering Company, of 209 Washington street, Boston, Mass., manufacturers of factory lavatories, lockers, stools, etc. will move its plant from Winchester, to South Framingham, Mass., about August 1st. The company has purchased the plant of the Framingham Box Company, containing 30,000 square feet of floor space, which is being fitted up to meet with the needs of its business. The new quarters will give the company increased facilities, which were made imperative by the rapid increase in the company's business.

MOVE BRASS FACTORY TO STONEHAM.

The Goodall Manufacturing Company, of Stoneham, Mass., has been incorporated with a capital of $100,000, and has succeeded the Goodall & Tallman Manufacturing Company, of Portsmouth, N. H. The company has fitted up a factory in Stoneham for the manufacture of the Goodall telescoping unions, conduit connections and combination union and valve, a new line of specialties quite unique in many respects, which it expects to place upon the market in a short time. They will be made in brass, bronze and iron, plain malleable and galvanized. The officers of the company are: President, J. M. Goodall, vice-president, J. R. Prescott, treasurer, Frank S. Head, and secretary, F. H. Rounds.

CONSOLIDATED ENGINEERING CO. SECURES VALUABLE RIGHTS.

The Consolidated Engineering Co., of 42 West Jackson boulevard, Chicago, has concluded negotiations with the Thermograde Valve Co., of Boston, Mass., whereby the Consolidated Engineering Co. takes over all interests of the Thermograde Valve Company in

all that part of the United States located west and south of Altoona, Pa., and Baltimore, Md. Under the terms of this contract, the Consolidated Engineering Co. has the exclusive right to manufacture, use, and sell to others for use in the territory taken over, all of the Thermograde Valve Co.'s appliances, including the Thermograde steam supply valve for controlling the amount of steam admitted to a radiator, and the Thermograde auto return valve for discharging the air and water of condensation from the radiators.

SOMERVILLE IRON CO. HAS SERIOUS FIRE.

The foundry building of the Somerville Iron Co., Somerville, N. J., was destroyed by fire on Thursday night, July 8.

BUILDS TWO NEW ADDITIONS.

The Lenox Furnace Company, of Marshalltown, Iowa, has completed 45x60 feet addition to its foundry and is at work on another new building, 56x90 feet. The company reports the outlook for business very bright.

MEMBERS OF CHICAGO HEATING TRADE ENJOY DAY OF GOLF.

For the purpose of promoting good fellowship in the trade and incidentally the ancient game of golf, it will be remembered that some twenty well-known members of the jobbing and manufacturing branch of the heating trade in Chicago assembled each month last summer successively at the Exmoor, Hinsdale and Calumet Country Clubs. These events proved so successful and pleasant that it was decided to arrange similar affairs this summer, and the first of this season's series was held last Thursday, July 15, at the Homewood Country Club, Flossmoor, Ill., where a most pleasant day was spent by those who accepted the invitation extended by the committee on arrangements which consists of the following gentlemen: C. W. Hubbell, of Henion & Hubbell; D. E. McCabe, of International Heater Company; J. E. Holland, of Holland Radiator Company; J. W. Watson, of the J. L. Mott Iron Works, and R. B. Flershem, of American Radiator Company.

INTERNATIONAL STEAM PUMP HAD POOR YEAR.

The annual report of the International Steam Pump Company for the year ending March 31, 1909, was made public last week and it shows a decrease of $322,323 in manufacturing and trading profits. Speaking of the future, President Guggenheim, in his report to the shareholders, said: "There is reason to believe that the new fiscal year will witness the restoration of commercial prosperity, and our shops are prepared to reap the benefit of normal conditions to the fullest extent. Owing to commercial and industrial depression in the last fiscal year, business was enormously curtailed. Notwithstanding this, however, it is a source of gratification to find that with a volume of business decreased to approximately 65 per cent of the total done in the previous fiscal year, our net profits for the year 1908-'09 are equal to 90 per cent of the net profits of 1907-'08. Such a satisfactory result was accomplished only by the closest attention to economics in the manufacture and selling of our products. During the year we have added many new tools of the most modern type for the economical manufacture of our output."

PIG IRON MARKET SHOWS IMPROVEMENT

Iron Prices are firm with a tendency to advance

Consumption of Copper increasing steadily

MORE ACTIVITY IN IRON AND STEEL.

Chicago, Ill.—Within the past few weeks the situation has changed materially for the better, increasing activity being the rule in the iron and steel business. Certain eastern foundries have been buying quite heavily. This is also true of several leading pipe makers, radiator and agricultural concerns. This activity has resulted in a cleaning up of a good share of the accumulated stocks. In the South the furnaces have advanced prices, and nearly all of the Northern furnaces have followed suit to the tune of some 50 cents to a ton or more. The shipment appears to be constantly growing in volume and there is a certain stiffness in the quotations which had not been seen in many months previous. These tendencies, combined with the reports of good crops as given by the government, render the outlook very hopeful.

THE COPPER MARKET.

Chicago, Ill.—The market is quiet with apparently very little change. It would seem that the consumption of this metal is increasing steadily, although little advance may be looked for until later in the year.

NEW YORK METAL MARKET, JULY 13.

Copper, Prime, Lake	$13.37½
Copper, Electrolytic	12.95
Antimony, Cookson's	8.37½
Lead	4.35
Straits Tin	28.95
Spelter	5.37½

CHICAGO IRON MARKET, JULY 15.

Southern, No. 2 Foundry	$16.85-17.35
Northern, No. 2 Foundry	16.50-17.00
Lake Superior Charcoal	19.50-20.00

July 15, 1909:

Foundry iron was same as week previous
50c less per ton than the year previous
Copper was 3/8c less than the month previous
½c more than the year previous

NEW YORK OLD METAL MARKET.

New York.—Dealers buying prices are as follows:

Heavy Crucibled copper	$11.50 to	11.75
Heavy copper wire	11.25	11.50
Light copper	10.25	10.50
Uncrucibled hy. copper	11.25	11.50
No. 1 mach. composition	10.75	11.00

Plumbers cocks and faucets	9.00	9.50
Heavy brass	8.00	8.25
Light brass	6.00	6.25
New brass scrap	8.50	8.75
No 1 brass turnings	7.25	7.50
No. 1 comp. turnings	8.50	9.00
Block tin pipe	26.00	27.00
No. 1 pewter	18.00	19.00
Solder joints	6.25	6.50
Heavy lead	4.00	4.10
Tea lead	3.75	3.80

CHICAGO OLD METAL MARKET.

Chicago, Ill.—Dealers' buying prices are as follows:

Clean heavy copper and wire	$12.00
Light copper	10.75
Heavy composition	11.00
Heavy yellow brass	8.50
Light brass	5.25
Heavy lead	4.00
Tea lead	3.50
Scrap zinc	4.00
Block tin pipe	24.00

SERIOUS STRIKE IN TIN PLATE INDUSTRY.

Between 25,000 and 30,000 workmen—coal miners, tin and sheet plate workers and men in various steel crafts—are on strike in western Pennsylvania, eastern Ohio and West Virginia. A majority of the idle men are in the Pittsburgh district. It is said that the tin-plate workers' strike will affect plants in different parts of the country, adding from 5,000 to 10,000 to the ranks of the strikers. The trouble is spreading to the independent sheet and tin-plate plants and from indications there is no hope of an adjustment.

PERSONAL MENTION

C. R. Crane, vice-president of Crane Co., Chicago, was this week appointed U. S. minister to China by President Taft.

S. Jacobson, manager of the Burlington Brass Works, of Burlington, Wis., was in Chicago this week calling on friends in the trade.

Sharland Hanley, vice-president of the Michigan Sanitary Company, of Muskegon, Mich., was a visitor to the Chicago trade this week.

F. D. Mitchell, of 309 Broadway, New York City, secretary-treasurer of the American Supply and Machinery Manufacturers' Association, was in Chicago this week.

L. C. Huesmann, president and manager of the Central Supply Company, of Indianapolis, Ind., was in Chicago this week and called on some of his many old friends in the trade.

William J. Childs, for twenty years engaged in the plumbing business in McKeesport, Pa., has forsaken his old trade to enter the wider field, which the real estate and insurance business offers.

George E. Downe, manager of the Boiler Department, of American Radiator Company, Chicago, has returned from a very extensive visit to Great Britain and Germany and is very much improved in health.

J. P. St. Germain, M. D., medical inspector of schools at New Bedford, Mass., has been calling on "Domestic Engineering" this week in the interest of better plumbing, heating and ventilation in the schools in his city.

James R. Wade, president of the National Vacuum Heating Company, of St. Louis, was in Milwaukee and Chicago this week calling on friends in the trade and visiting with the Consolidated Engineering Company, of Chicago, for which concern his company acts as St. Louis representatives.

Albert Sanders Hills, vice-president and treasurer of the Haydenville Brass Co., of Haydenville, Mass., is enjoying an extended vacation of three months, which he is spending in the West, touching at Battle Creek, Colorado City, the largest cities in California and finally taking in the Exposition at Seattle.

John L. E. Firmin, of San Francisco, secretary of the California State Association of Master Plumbers, while on a tour of the East incidental to his attendance at the National convention in Detroit, happened into New York last week and was immediately taken in hand by Tommy Cochrane, Al. Hill and Ike Brown, who "showed him the town" in Tommy's new gasoline wagon. The Westchester County constable is still looking for the party.

A BRIGHT SON OF A CAPABLE FATHER.

Delegates to the Detroit Convention who marked the youthful appearance of S. H. Morgan, the capable president of the Detroit association, will find it hard to believe that the genial S. H. has a son old enough to be established in business for himself. Yet such is the case, for C. Stanley Morgan, who has just attained his majority, has built up a paying business in pipe covering of his own manufacture. Morgan senior is, not without reason, proud of the young man's enterprise and business acumen and those who know him best prophesy a very bright future for this hustling son of a worthy father.

TWO NEW PUBLIC COMFORT STATIONS FOR WASHINGTON.

Washington, D. C.—It is a very encouraging word which comes from the Capital of the United States. Congress has appropriated funds for two more public comfort stations which when complete will make five for this city.

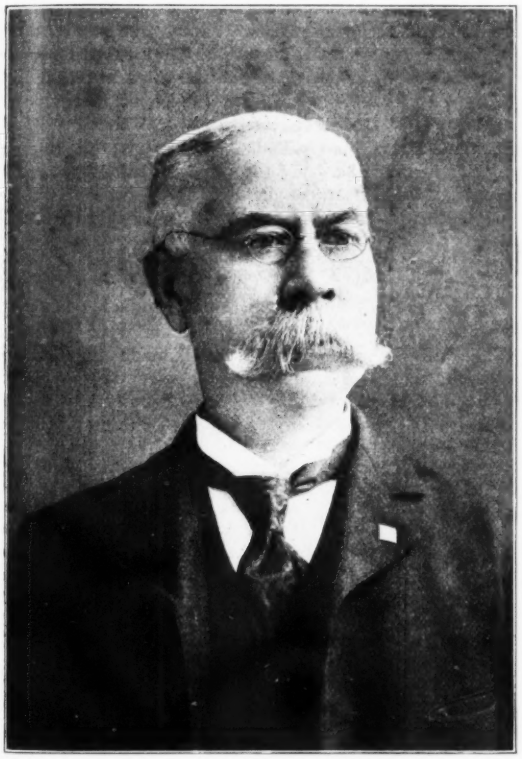
DISAGREE ABOUT PUBLIC COMFORT STATIONS.

Seattle, Wash.—Opposition to establishing a public comfort station in Pioneer Square in this city, for the convenience of exposition visitors, has brought inquiry from hotelkeepers to know if the city expects the hotels to furnish toilet room service for the floating population during the remaining term of the Alaska-Yukon-Pacific Exposition, particularly on Sundays when the saloons are closed. Our esteemed contemporary, "The Hotel Monthly," in commenting on this subject, says that **every large city should have public comfort stations in the interest of the general health,** and it is unreasonable to expect the hotels to furnish unlimited accommodation in this respect to persons not guests of the hotels.

OBITUARY

JAMES F. DAVLIN PASSES ON.

James F. Davlin, a former president of the Boston Association of Master Plumbers and one of the most prominent men in the trade in Greater Boston, passed on at his home in Somerville last Sunday, July 11. He was born in Lowell, April 23, 1842, and was the son of Michael F. and Nancy (McCullough) Davlin. When he was sixteen years of age Davlin went to New York,



The Late James F. Davlin, of Somerville, Mass.
Ex-president of the Boston Master Plumbers' Association and one of the founders of the National Association of Master Plumbers.

where he learned the plumbing trade in the establishment of John Shangle. He returned to Boston and enlisted in the Navy in 1862, spending three years in the service. After the war he returned to Boston, and with his brother opened a plumbing establishment in Cambridge under the firm name of James F. Davlin & Co., conducting the place of business for twelve years. Twenty-eight years ago, having dissolved the partnership with his brother and spent three months in New York, Davlin settled in Somerville, opening a plumbing shop on Somerville avenue. Later he moved to Webster avenue, where he remained in business until the time of his decease. Mr. Davlin was always prominent in association work and was a familiar figure and frequent speaker at all of the meetings and conventions. His words of wisdom and advice were always looked for and thoroughly appreciated when important matters were under consideration and he came to be known among plumbers as "The silver-tongued orator of Somerville." He was many times chosen as a delegate to the national conventions and had the distinction of acting in this capacity at both the first and second annual conventions, the important historical events at New York and Baltimore, in 1882 and 1883. With honor and credit to himself he held the position of president of the Boston association. He was also one of the organizers of a Master Plumbers' association in his home city of Somerville. During his residence in Cambridge Mr. Davlin was twice elected to membership in the common council in that city. During his residence in Somerville he was sent to the Legislature for two terms and served on the board of aldermen of the city. Mr. Davlin had been in ill health for the past two years, but was an interested spectator of the passing show at the Boston convention last year, though his infirmities did not allow him to take an active part in the proceedings. On this occasion he was honored with a seat on the platform at the opening session. Funeral services were held on Wednesday afternoon and were attended by many of his associates in the trade and representatives of the trade organizations.

SAN JOSE PLUMBING ORDINANCE TO BE TESTED IN COURT.

San Jose, Cal.—The plumbng ordinance of this city is to be given a test in the courts at an early date. According to R. S. Kooser, who operates one of the largest plumbng establishments here, the trial of J. D. Gray, a plumber in his employ, who was arrested last week for violating the plumbing ordinance, will be made a test case. It is claimed that the Plumbers' union was so powerful at the time the ordinance was passed as to force through measures that practically prohibit any one from doing a plumbing job in this city without being a member of the union.

SALT LAKE CITY PLUMBING STRIKE STILL ON.

Salt Lake City, Utah.—The first two weeks of the journeymen plumbers' strike has ended with the master plumbers slightly in the lead, although neither side has made a very noticeable gain. The situation stands now about the same as when the strike was declared. Neither side has asked for a conference and no attempt has been made to bring about an adjustment of the difficulty. The journeymen plumbers are asking that they be granted $6 a day for eight hours' work, which is an increase of 80 cents a day over the old scale. This demand is too much, according to the master plumbers. Several shops in the city are now working with almost a complete force of non-union men and more men are arriving daily from the east, although the number is hardly sufficient to do the work on hand at the present time. The large number of buildings in the course of construction has made work for a large number of plumbers. A representative of the master plumbers' association will leave for the east at a very early date to secure a force of non-union men to work here.

BUSY PICNIC SEASON FOR MASTER PLUMBERS

New York, Pittsburgh and Trenton Plumbers getting ready for their annual outings

MANHATTAN PLUMBERS PREPARING FOR ANNUAL OUTING.

New York, N. Y.—The Manhattan Association of Master Plumbers are making preparations for its annual outing. Every suitable place within fifty miles of New York is being considered and the entire trade in this vicinity is anxiously awaiting the report of the committee in charge of the arrangements, which is composed of the following gentlemen: T. A. Hill, I. J. Brown, Edward Hurley, T. J. Cummins, Bart F. Donohoe, Cuno Muller, David Deigan, T. S. Cochrane, Jr., George H. Creasy and Frank J. Fee.

PITTSBURGH PLUMBERS ARRANGE FOR ANNUAL OUTING.

Pittsburgh, Pa.—The Master Plumbers' Association of Pittsburgh and vicinity has decided that there will be an annual summer outing this year after all, and that it will be held at Alameda Park, Butler, Pa., on Saturday, August 7. It had been decided at a meeting a short itme ago that there would be no picnic this year, but so many of the members protested against passing up this outing, which is always one that is a source of great pleasure for the members and their families and guests, that the decision was reconsidered with the above result. This year, the outing will be held at a traction park about forty miles from Pittsburgh, Alameda Park being one of the most beautiful parks in this part of the country. It is known as the "Grove of a Thousand Trees," and is reached by the fast interurban electric line of the Pittsburgh & Butler Street Railway Company. The local association has arranged with the street railway company to have special cars on the siding at Fifth street and Duquesne Way, which will leave in rapid succession starting at 8:30 a. m., and which will make the run through to the park at high speed without stops, making the trip in about and hour and a half. These cars are all of the heavy Pullman express type, and are capable of fifty miles per hour. The return trip will be made, leaving Butler at 7 p. m., arriving in Pittsburgh about 9 o'clock. Regular cars leave both Pittsburgh and Butler every hour, however, so that any who find it impossible to leave on the early cars in the morning will be able to get other cars, and to spend the afternoon at the picnic. Also any desiring to return later in the evening will be able to return on regular cars, which run until nearly midnight. The rate for the trip will be 85 cents round trip, which is only good on the special cars going and coming back. The regular fare is $1.25, round trip. The outing will be a basket picnic, and the association, following out the usual custom, will furnish free coffee and cream to all desiring it. The committee in charge makes a special request that all members close up their shops on this day and attend the picnic, not forgetting to take their families, friends, etc. Wives and sweethearts will be especially welcome, and it is hoped that the number of ladies this year will even exceed the number of last year, which was a banner year. Dancing will be provided free during the entire day, and the fine dancing pavilion will be for the exclusive use of the members of the association and their friends and guests.

There will also be a complete program of sports, races, etc., as well as two ball games, one in the morning and the other in the afternoon, which will provide an abundance of fun and recreation for all present.

The committee in charge of the picnic is composed of Daniel G. Deely, chairman; E. T. Flannigan, T. J. Scanlon, Mack Snively and O. R. Cratty. Other committees to take charge of the minor details, arrange the program, look after the dancing floor, etc., will be appointed in the course of the next two or three weeks.

TRENTON PLUMBERS PREPARE FOR OUTING.

Trenton, N. J.—The Trenton Master Plumbers' Association will hold its seventh annual outing on Tuesday, July 27, at the Inter-State Fair Grounds. Elaborate preparations are being made to insure a pleasant and successful event by a committee of experts consisting of Wm. F. Cody, chairman; Walter Margerum, Daniel Sisti, George B. Hunt and Harry Griener.

ANTICIPATE SUCCESSFUL OUTING.

Johnstown, Pa.—The annual outing of the Johnstown Association of Master Plumbers, which is to be held on Wednesday, July 28, at Sulphur Springs, should prove full of interest and solid enjoyment. The committee promises many good things and a large attendance is looked for.

"SANITATION CAR" PROVES A SUCCESS.

San Francisco, Cal.—The state sanitation car which has recently been on a tour of Northern California is now at Sacramento and will be sent out again shortly. It is estimated that since the car started out it has been visited by 60,000 persons and it is believed that a great deal of good has been done in instructing people along the lines of modern sanitary ideas. The exhibit has been visited by a large number of plumbers in the various sections of the State and the information secured by them is expected to be of decided advantage to them in their work.

CONVENTION DATES.

August 9, 10 and 11, 1909.—Annual convention of the **International Acetylene Association** in New York City. Headquarters at the Hotel Knickerbocker.

August 24 and 25, 1909.—Regular quarterly meeting of the **National Association of Brass Manufacturers** in Detroit, Mich.

September 15 and 16, 1909.—Annual convention of the **National Association of Master Plumbers of the Dominion of Canada,** at Montreal.

MIDDLE STATES

Marion, O.—Keegan, Boger and Company have disposed of their plumbing business here, to E. S. Moon.

Pana, Ill.—William Seiler and Benjamin Seiler are making arrangements to open a plumbing establishment here.

Taylorsville, Ill.—Powel & Son have secured a $4,100 contract for the plumbing installation in the new residence of Grover Hoover.

Ottawa, Ill.—J. W. Clegg, of this place, has been awarded the plumbing and heating contract in the new residence to be erected by M. T. Maloney.

La Porte, Ind.—Edward Kanney, of 614 Monroe street, has been awarded the contract for the heating and ventilation of the new high school at New Carlisle. The contract amounts to $3,800.

Mansfield, O.—Cairns & Swigert is the name of a new firm which has been formed here to conduct a plumbing, heating, and gas fitting business, at No. 18 S. Park street. T. Cairns and John S. Swigert are the members of the firm.

Niles, Ohio.—The firm known as the Niles Plumbing & Heating company, have dissolved partnership, Mr. H. E. Davis having purchased the interest of the other partner, D. L. Jenkins. Mr. Davis will continue the business under the old name.

Detroit, Mich.—Ernst Venn, of 777 Woodward avenue is building a fine residence for himself and it goes without saying that "Ernie" is not one of those doctors who never take their own medicine. On the contrary the plumbing work will be just a little bit more classy than some of his swell customers can afford.

Newark, O.—The official board of the M. E. church here has awarded the plumbing and heating contract for the new church building to Hoffman, Conklin & Co., Columbus, O., on their bid of $5,681. Other bidders were: F. H. Evans, Newark, O., $6,241.14; J. T. Abbott, Newark, O., $5,894; Fitzpatrick & Hoepfner, Columbus, O., $5,709.

Detroit, Mich.—John McKerchy, an old-time master plumber, who is now engaged in sand-dredging, is building a fine residence for himself and has given the plumbing work to John Duggan. Needless to say the fixtures will be of the finest and the trimmings exceptionally handsome. The house is to have two bath rooms, equipped with pedestal lavatories, china tank closets and highly finished tubs.

Toronto, O.—The Toronto Plumbing & Heating Co., of this city, has on hand a large assortment of work, in which some of the following contracts are noticed: The plumbing, heating and ventilating of the new bank building at Jewett, O.; plumbing and heating the three story apartments for Hamilton & McKee, at Steubenville, O.; also the plumbing and heating for Mrs. Geo. Floto; and a bunch of other heating and plumbing contracts in Toronto, Steubenville and Follansbee, W. Va.

Oberlin, Ohio.—Several new college buildings will be erected here. The most important of these structures is the new men's building to be erected at a cost of $125,000. This building will be located in the block in which Warner gymnasium stands. A second edifice is the administration building, to cost approximately $50,000, to be located back of the present botanical laboratory. A third building will be a new home to cost $65,000 and to be used for practice rooms in the department of music. It is expected that work upon the men's building and upon Rice hall will begin immediately.

Detroit, Mich.—The plumbing and heating work for the five new floors which are to be added to the Pontchartrain Hotel will involve some nice planning on the part of Ernst Brothers, who have the contract. Thirty-five complete bath rooms, thirty-two of which will have showers as well as bath tubs, are called for in the specifications. As the five stories now to be added were contemplated in the original plans, proper provision for extensions was probably made in laying out the work, but Ernst Brothers will have to pick up the work where the New York plumbing contractor dropped it and follow out the other fellow's ideas, not always easy, as some of our readers have reason to know.

Detroit, Mich.—John H. Kennedy is plumbing a $15,000 residence for E. M. Rothman, under the direction of Baxter & Odell, Architects. Three bath rooms and a separate toilet room, all calling for high grade fixtures, have been roughed in. The house is also piped for a vacuum cleaning system. An $8,000 residence for Mrs. W. E. Rooney, at Grosse Pointe, is also being equipped by Mr. Kennedy with up-to-date plumbing outfit for each of the two bath rooms and two toilet rooms. Other important work which Mr.

BLANK FOR

Report of an Award of Heating or Plumbing Contract

(Cut out, fill in and mail promptly)

DOMESTIC ENGINEERING
Chicago

We have been awarded the contract for

_____
plumbing or heating

the _____, the
kind of building

amount of the contract being $_____

Owner's name _____

Address _____

Architect's name _____

Address _____

General Contractor's name _____

Address _____

Our own name _____

Address _____

Kennedy has on hand is an eight-apartment house for F. C. Whitney, a nine-house terrace for Spier & Rohur, Architects, and a ten-house terrace for E. W. Gregory, Architect.

NOTES FROM THE WEST

Liberty, Mo.—Lewis & Kitchen, of Kansas City, Mo., were awarded the contract for the plumbing in the new public school here.

Hutchinson, Kans.—The contract for the erection of the new Murphy Hotel, in this city, has been let to the Wurster Construction Co., of Wichita.

Grand Island, Neb.—The Wm. Kelly company, of this place, has been awarded the plumbing and heating contract, $1,800, in the residence of J. H. Yound.

Moorehead, Iowa.—The Moorehead State Bank, has let the contract for the erection of a new bank building to the Lytle Construction Co., of Sioux City.

Chillicothe, Mo.—The building committee of the Elks, have awarded the contract for the erection of the new Elks' Home to Contractor A. H. Huggett, of this city. Cost, $14,500.

Des Moines, Ia.—W. L. Brown will erect a ten-story hotel on Seventh street, between Locust and Grand avenues. The building will be equipped with modern improvements.

Emmetsburg, Ia.—Bids will be received July 23, '09, for remodeling the heating and ventilating plant in the high school building. Address J. S. Atkinson, Secretary of the School Board.

Denver, Colo.—Johnson & Davis, Plumbing Heating Company, has been incorporated with a capital of $10,000. The officers are: James J. Johnson, A. J. Davis and M. W. Weber.

The Kansas delegation at the Master Plumbers' convention in Detroit. In the upper row they are, reading from left to right: A. P. Elder, of Ottawa; E. D. Draper, of Kansas City; M. F. Peterson, of Kansas City, Kan.; W. E. Fuller, of Seneca. In the lower row they are: Lawrence Draper, Mrs. Peterson, Mrs. Draper, Mrs. Fuller and Miss Elder.

Hutchinson, Kan.—The school board has awarded the contract for the plumbing and heating of the new grade building here to McMann & Company, of Kansas City, their bid being $5,568.68.

Omaha, Neb.—The contract for the erection of the new street car house, at this city, Tenth and Pierce streets, has been let to Contractor F. B. Burness, of Kansas City. Cost, $150,000.

Newton, Ia.—James Rowson & Co., of Iowa City, was awarded the contract for the construction of a heating plant and plumbing for the court house and jail. It is reported the amount of their bid, complete, was $16,900.

Omaha, Neb.—Architects Holabird & Roche, Monadnock building, Chicago, have prepared plans for a fifteen-story office building at the southeast corner of Sixteenth and Harney streets, to be erected by the City National Bank Building Company. John R. Webster, James E. Baum and others are stockholders.

THE GREAT NORTHWEST

Wallace, Idaho.—The plumbing shop here of C. P. Hendricks was destroyed by fire recently.

Aberdeen, Wash.—C. A. Pinckney of this city secured the plumbing contract in the fine new high school to be erected here.

Winona, Minn.—The contract for changing the heating plant in the Central school building has been awarded to J. Sherman & Sons.

Madison, Wis.—A new $200,000 Mercy Hospital building will be erected here. Address Sister Ignatius, head of the Mercy Hospital.

Arlington, Minn.—A $6,000, two-story school will be erected here. Address Architect Fremont D. Orff, Minneapolis, who has prepared plans.

Belle Fourche, S. D.—W. T. Wyckoff has purchased the interest of his partner, D. T. Arnold, in the plumbing business which they have conducted here.

Manitowoc, Wis.—G. H. Kallies has the heating contract on the new south side public school at Two Rivers, Wis., the price for the work being $1,375.

Kenosha, Wis.—Kaelber & Kraft were awarded the plumbing contract for the new Columbus school, the amount of their bid being approximately $3,100.

Sheboygan, Wis.—The Sanitary Plumbing Company of Sheboygan has been incorporated by W. E. Murphy, W. F. Ribbens and W. C. Johann. The capital stock is $5,000.

Bergen, N. D.—Bids will be received July 24, for building school house in District 47, Lake Hester township. Address Robt. Grimm, Clerk of the School Board.

Northwood, N. D.—The contract has been awarded to E. Colton for the erection of the new church by the Lutheran congregation. The consideration is $10,000 for the building.

Aberdeen, S. D.—The Sacred Heart Congregation will erect a $25,000 parochial school at Kline street and Second avenue S. E. Address Rev. Fr. Dermody who is interested.

Highland, Wis.—The contract for constructing 4,000

Labor-Saving Helps.

It's the little labor-saving devices on a first-class Boiler having large heat-making capacity, which help to make that capacity most elastic, most controllable and of highest value to the house-owner. A strong chain of good heating results is the product because there are no weak links due to difficult regulation.

IDEAL STEAM BOILER

On left hand is an easy shaker. The left rod on top regulates smoke damper from front. The Sylphon Regulator keeps the dampers just right. The gauge tells the pressure, and the column under it has a siphon trap and best of try-cocks to test water heights. All simple and "easy to run".

This fact sums up one of the strongest points in IDEAL Steam and Water Boilers. The accompanying picture tells a story of many modern improvements which make it easy to run and regulate the Boiler. Each fitting shown is made and selected with reference to better heating results, better control, easier care-taking; and all this produces the largest degree of satisfaction with the least amount of coal. These small features (not equaled and often not found at all in other Boilers,) help to make the IDEAL the easiest Boiler to sell.

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General Offices, 282-286 Michigan Ave., Chicago.

New York	Cincinnati	Cleveland	Atlanta	Brantford, Ont.	Denver
Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco

ft. 4-in., c. i. water main has been awarded to J. M. Healy & Company, Chicago, Ill. Amount of contract, approximately, $3,300.

Butte, Mont.—The Eschle Plumbing & Heating Co., of this city, has received the contract, $13,500, for changing the heating plant in the Washington school from hot air to steam, and also for installing the new plumbing in the school.

Milwaukee, Wis.—The Downey-Kruse Co., of this city, has secured the contract for remodeling and installing the Van Auken System in the St. Mary's Hospital at Rochester, Minn. The contract calls for 20,000 sq. ft. of radiation.

Minneapolis, Minn.—O. F. Kohl & Company, 110 Washington avenue, North, of this city, secured contracts for gas work and plumbing in the following residences and halls: C. S. Allanson, Lake of Isles boulevard; W. H. Pillsbury, Lyndale avenue, South; A. D. Condon, Oliver avenue, North; Prof. H. N. Winchell, East River parkway; W. A. Currie, 816 Summit avenue; six cottages, Shady Island, Minnetonka; Bohemian hall, Twenty-third avenue, North, and Washington.

PACIFIC COAST

Newman, Cal.—The Newman Waterworks Company has been incorporated by E. S. Wangenheim, C. W. Schank, L. Dobrzensky, and W. W. Giddings.

San Francisco, Cal.—The Red Front Plumbing & Hardware Co. has been dissolved by mutual consent, W. J. Nebel continuing and assuming all liabilities of the firm.

Claremont, Cal.—The Valley View Water Company has been incorporated with a capital stock of $50,000. Considerable development work will soon be done and the company will be in the market for pipe and valves.

San Francisco, Cal.—Work on fifteen sets of new quarters to be built at the Presidio will be commenced within a few days, the contracts having been awarded recently. The plumbing contract was awarded to the Burnham Plumbing Company on its bid of $18,017.

San Francisco, Cal.—The finishing touches are now being put on the plumbing of the new Palace Hotel and W. S. Snook & Son have taken their men to other work. That pumbing firm has moved to its new quarters on Clay street, just off Montgomery and is now well settled.

San Jose, Cal.—Bids are being received for the heating and plumbing work in the new Normal School buildings here and the contracts are expected to be announced shortly. This is one of the most important undertakings in the building line now engaged in by the State and a number of local contractors have submitted bids.

Pittsburgh, Pa.—McGinnis-Smith Co., of this city, has secured the contract for installing the new heating apparatus, including the Van Auken system, in the Allegheny County work house. The contract calls for 10,000 sq. ft. of radiation.

BOOK REVIEWS

History of Sanitation. By J. J. Cosgrove, S. C. One octavo cloth bound volume, size 5½"x8½", 124 pages, 78 illustrations. Published by Standard Sanitary Mfg. Co., Pittsburg, 1909. Price $2.00.

This book grew out of a series of magazine articles which the author contributed to "Modern Sanitation," and in which he made an attempt to trace the advancement in sanitation from its earliest stages to the present time. In the light of our twentieth century knowledge we would unhesitatingly call a history of sanitation the history of civilization, for is it not a fact that the higher a country or nation advances in civilization the more attention we find given to public and personal sanitation? The author's definition of the history of sanitation as "the story of the world's struggle for an adequate supply of wholesome water, and of its efforts to dispose of the resultant sewage without menace to health or offense to sight or smell," is hardly a satisfactory one, for such a definition overlooks or excludes from consideration many correlated but just as important sanitary subjects. But the author is at least consistent, and with his incomplete definition as a basis he limit s himself practically to three subjects, namely the water supply, the public baths and the sewerage, and so it comes that he covers in his book only a part of the ground which should have been included. In other words, his history is rather fragmentary; it is not a history in the accepted sense of the term. He deals rather with a few chapters in the history of sanitation, but with this limitation we must concede that he has done his work well, for he has gathered together in his book much of what should be of vital interest to sanitarians. We say **should be** advisedly, for we deplore, together with others, the present entire lack of interest which the general public has in matters relating to public health. Just because this is the area of wireless telegraphy, of automobiles, of the conquest of the air, of sixteen-hour trains from New York to Chicago, of five-day ocean greyhounds crossing the "big pond," of 45 and 50-story absurd architectural monstrosities, has the time really arrived when we can let well enough alone and expect hygienic surroundings and cities of Hygiea? Emphatically no! The struggle, which has been going on in the past fifty years, to eliminate preventable disease from our midst must go on, if anything, more strenuously than before, and the battle against pestilence must be fought with the assistance of all the facts gained through the aid of the modern sciences. In this sense, as an aid to arouse public interest in matters of vital importance to the community, we welcome the appearance of the book, and we express to its publishers our appreciation of the fact that they have spared no efforts to render the book outwardly attractive. It is a model of typography, and the numerous judiciously selected illustrations from photographs are splendid examples of the printer's art. We do hope the book will have a large sale and we trust when the new edition will be called for, as it should be, very soon, the author will take the opportunity to enlarge his book, to add chapters covering other phases of sanitation th n those to which he has limited himself in this first edition, and

to make it more complete than it is at present. We also suggest that some matters might with advantage be condensed, as, for instance, Chap. VIII, which is almost entirely taken up with a reprint from Sedgwick's Hygiene and Public Health, in which he (Sedgwick) quotes the history of the London cholera epidemic of 1854 from other sources. We also advise either to omit the appendix on plumbing entirely, as in its present shape it is woefully superficial and incomplete, or else to make it fuller, more readable, more attractive. By digging up many curious and interesting facts regarding ancient sanitation, the author has shown that he has the proper qualifications to handle the subject successfully, why should he not give us a well-digested and full account of the present-day progress? With these well-meant remarks we commend the book to the kind attention of our readers.—**W. P. G.**

WITH THE MAKERS

The Magee Furnace Company, of Boston, Mass., is equipping a new show room at 64 Summer street, that city, in the heart of the shopping district. A complete line of that company's ranges, heaters and furnaces will be placed upon exhibition with an able demonstrator in charge. This is quite a unique idea as it will be used as a show room only. The company's offices and salesrooms on Union street will be maintained the same as heretofore.

One of the most extensive advertising campaigns entered upon this year has been inaugurated by the Pittsburg Sanitary Mfg. Co., of Pittsburg, Pa., in behalf of its newest product, the "Steel King" closet tank. The campaign, which has already attracted considerable attention, is under the personal supervision of Geo. Bailey, the company's wide-awake president. Domestic and foreign trade journals are the mediums used, supplemented by an extremely strenuous and noticeably original application of the "personal letter" style of publicity. All pictorial matter is of special design and artistic quality and a credit to the firm using it. It is merely another example of what can be accomplished with the requisite executive ability and interest properly focused upon an article of merit.

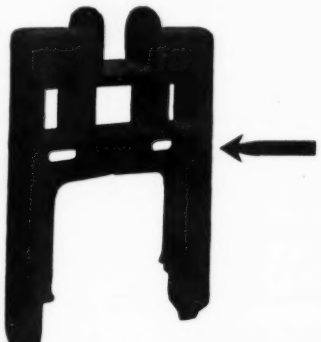
TRADE LITERATURE

From the Revere Rubber Co., Boston, Mass.: A new catalog of this company's extensive line of mechanical rubber goods, handsomely printed on enameled paper in two colors and fully illustrated; 133 pages, 7x9½ inches.

From The Pressed Radiator Company of America, Pittsburgh, Pa.: "Kinnear Pressed Radiators," 24 pages, 5½x9 inches. A handsome booklet, profusely illustrated, carefully compiled and in a convenient form for ready reference, describing the Kinnear radiators for steam and hot water heating and giving a short history of their development. These radiators in their present form of manufacture with their new double interlocking seam, which is applied to all models, are said to be strong, durable, efficient, light, compact,

CAPITOL BOILERS AND RADIATORS

Thin Waterways



Intermediate Sections, 25 Series Improved Capitol Boiler

When you examine a boiler with "thin waterways" note carefully this one point—are they so shaped that full benefit is received from the drop legs? Note what a difference the opening makes. The burning gases really strike the crown sheet and all waterways in the fire chamber because the openings in the drop legs allow the burning gases to circulate freely and reach all corners. No "air-pocket" between the sections of **Capitol Boilers.**

Have you our new Catalog "D"?

United States Heater Company.

General Offices and Works: Fort St. and Campbell Ave., DETROIT, MICH.

Branches:		Sales Agencies:
DETROIT	139 Jefferson Ave.	NORFOLK & RICHMOND, VA., Virginia-Carolina Supply Co.
NEW YORK	129 Worth St.	MINNEAPOLIS, MINN., Plumbing & S. F. Supplies Co.
CHICAGO	34 Dearborn St.	ST. LOUIS, MO., L. M. Rumsey Manufacturing Co.
OMAHA	916 Farnam St.	DENVER, COLO., Kellogg & Stokes Stove Co.

sanitary, attractive and quick acting, and any of the models can be placed on the wall, off the floor and out of the way. Space in this booklet is also given to the illustration and description of the Kinnear Radiator Shield, made only for Kinnear Pressed Radiators. This shield is light and neat in appearance and very easily adjusted or removed, and it does not interfere with the operation of the radiator valves or air valves. Interested parties can obtain a copy of this valuable booklet on application mentioning "Domestic Engineering."

From Wm. Heap & Sons, Grand Haven, Michigan: A very handsome catalogue (of 28 pages) illustrating their line of "BULLDOG" Seats, which they claim is the strongest and best seat ever made. William Heap, the head of the firm has been making seats for the past thirty-five years. He was granted a patent twenty-four years ago (May 5, 1886) for the first seat ever made having an iron bolt let into the woodwork to hold the joints together. A copy of this catalogue will be mailed plumbers on request, if they state the name of their jobber.

PATENTS

926,092 Water-Pipe. William H. Bright, Hampstead, Md.

926,120. Orchard-Heater. Hans P. Holt, Grand Junction, Colo.

926,115. Feed-Water Heater and Separator. William S. Hallowell and Joseph W. Gamble, Philadelphia, Pa.

926,185. Electric Water-Heater. William E. Hayes, Omaha, Neb.

926,267. Cam-Operated Pump. Samuel W. Luitwieler, Los Angeles, Cal.

926,415. Hose-Pipe Coupling. John C. Hooper and Arthur W. Bratt, Brunswick, Md., assignors of one-third to Andrew Knell, Jr., Baltimore, Md.

926,466. Closet-Seat Bumper. James Bropson, Cleveland, Ohio.

926,552. Sink-Trap. Thomas E. Doyle, Milwaukee, Wis.

Burlington, Iowa.—The Russell Sewage Disposal Company, of this city, furnished a Russell Sewerless Sewage Disposal system, which has just been installed at Banker C. W. Finney's modern residence at Eldon, Iowa.—Adv.

THE WATER WAY MARCH.

Send for New D. & C. March and Two-Step.

The D. & C. Lake Lines have just published a March and Two-Step written by Harry H. Zickel, composer of the popular "Jolly Student," "Black America," "Ford" and other very successful selections. This composition, which was expressly written for the D. & C. Lake Lines, is full of life and action, and so catchy that it is bound to be the popular success of this season. You will hear it everywhere. Everybody will whistle the tune. Get your copy first. Mailed to any address for only five two-cent stamps. Address Detroit & Cleveland Navigation Co., Dept. W., Detroit, Mich.—Adv.

JOBBERS!

THE

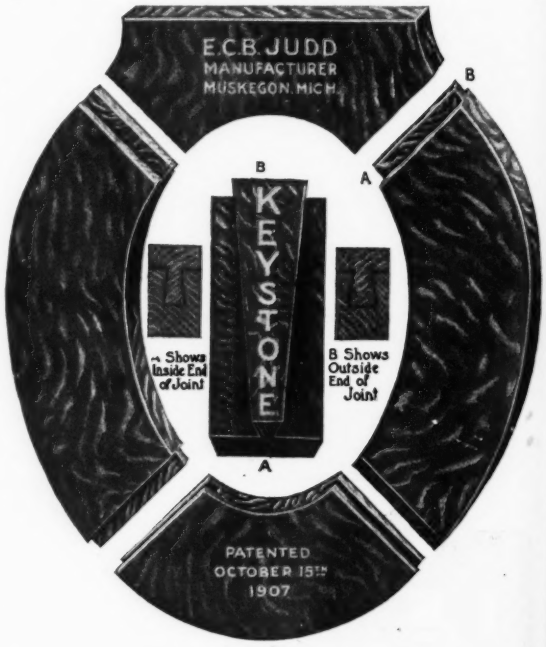
KEYSTONE

DOUBLE DOVETAIL WEDGE JOINT

SEAT

is the Strongest Seat Made

(READ GUARANTEE)



HONESTLY BUILT
ATTRACTIVELY
FINISHED

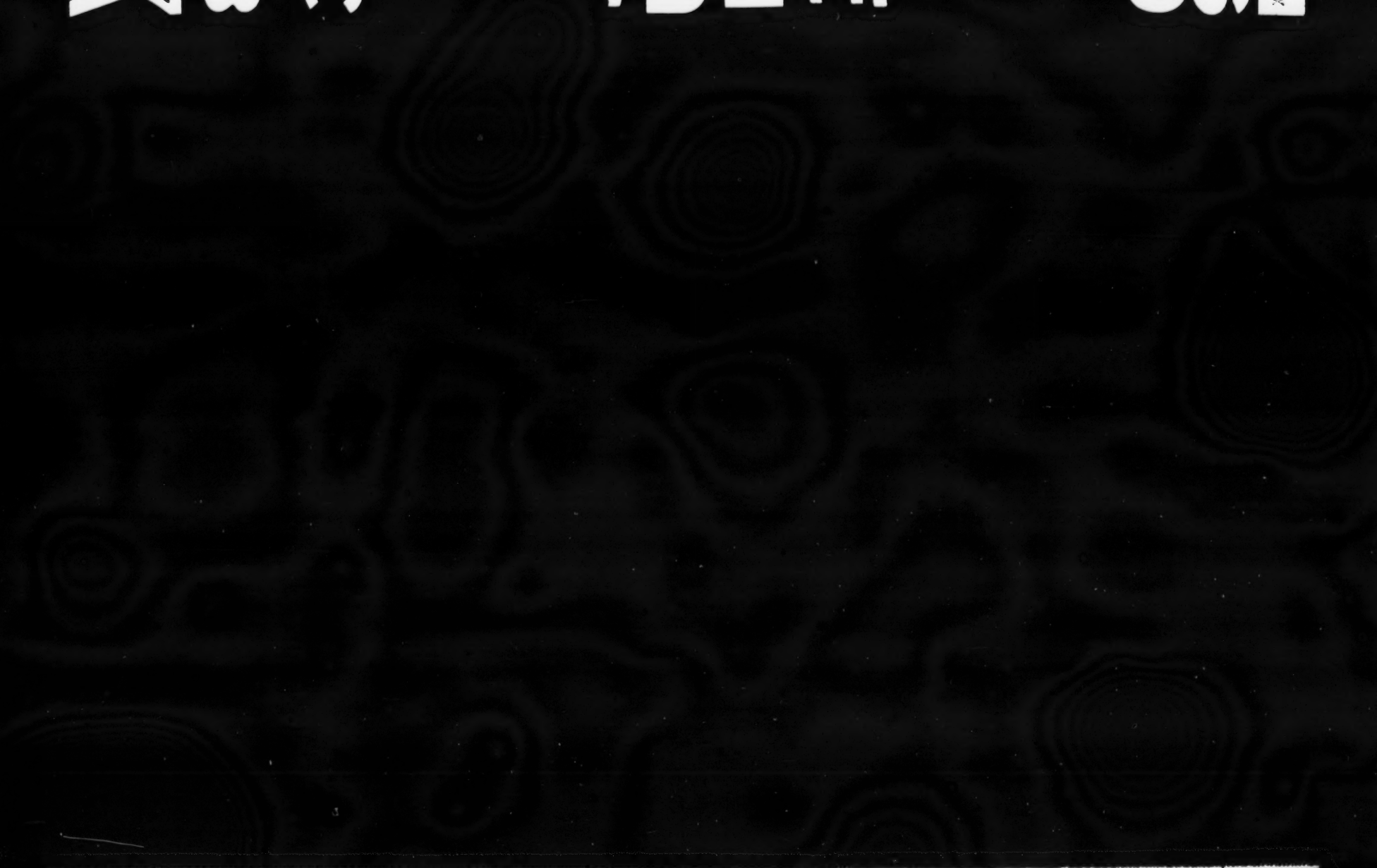
JOBBERS

Everywhere should send for **Free Sample** of the **Keystone Double Dovetail Taper Wedge Locked Joint.** When you see the real joint you will understand, better than you can from any illustration—why **Keystone Seats** are the **strongest made.**

MR. PLUMBER

If your Jobber does not handle my Seat, write me and I'll see you are supplied.

E. C. B. JUDD

Manufacturer KEYSTONE CLOSET SEATS and PLUMBING BRASS GOODS

MUSKEGON, MICHIGAN